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THE

PHILOSOPHICAL

AND

Physical Opinions.

Written by her Excellency, the Lady

MARCHIONESSE of NEWCASTLE.

97386

LONDON

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TO THE

LADY MARQVESSE OF NEVVCASTLE,

On her Book intitled her Philoſophicall, and Phyſicall Opinions.

WEre the old Grave Philophers alive,
How they would envy you, and all would ſtrive
Who firſt ſhould burn their Books; ſince they ſo long
Thus have abuſ'd the world, and taught us wrong,
With hard words that mean nothing; which non-ſenſe,
When we have Conn'd by heart, then we commence
Maſters and Doctors, with grave looks; and then
Proud, becauſe think, thus we are learned men,
And know not that we do know nothing right,
Like blinde men now, led onely by your ſight.
And for diſeaſes, let the Doctors look
Thoſe worthy learned men but in your Book,
They'le finde ſuch news in their art, and ſo true
As old *Hippocrates* he never knew,
Nor yet vaſt *Gallen*; ſo you need not ſeek
Farther then Engliſh, to know leſſe in Greek;
If you read this and ſtudy it, you may
Out of dark ignorance ſee brighter Day.

W. NEWCASTLE.

A AN

AN

EPISTLE

To justifie the

LADY NEWCASTLE,

AND

Truth against falshood, laying those false, and malicious aspersions of her, that she was not Authour of her BOOKS.

I would willingly begin with the common, and Dunstable rode of Epistles, Gentle Readers, *but finding you much otherwise, I will fall to our discourse in hand. First 'tis but your envious Supposition that this Lady must have converst with many Scholers of all kindes in learning, when 'tis well known the contrary, that she never converst with any profest Shooler in learning, for to learn, neither did she need it, since she had the conversation of her Honorable, and most learned Brother from her cradle; and since she was married, with my worthy and learned Brother; and for my self I have lived in the great world a great while, and have thought of what has been brought to me by the senses, more then was put into me by learned discourse; for I do not love to be led by the nose, by Authority and old Authours,* ipse dixit *will not serve my turn, were* Aristotle *made a more Philosophical Bible then he is, and all scholers to have a lively faith in him, doth not move me to be of their Philosophical churche at all. And* I *assure you her conversation with her Brother, and Brother-in-law, were enough without a miracle or an impossibility to get the language of the arts, and learned professions, which are their terms, without [illegible] any degrees in Schooles. It is not so difficult a thing though [illegible] make mountains of mole-hills, & say they, that this Lady useth many t[illegible]mes of*

the Schooles; but truly she did never Impe her high-flying Phancies, with any old broken Fethers out of any universitie; and if you read well, which is to understand, and look on her Poems, you will finde they are all new born Phansies, never toucht of heretofore. But for the variety of the terms, or nests of Divines, Philosophers, Physicians, Geometricians, Astronomers, and the rest of the Gown-Tribe, as one teaches them, how is it possible she should know them; And first for Divinity, when she speaks of Predestination, Free-will, Transubstantiation, and consubstantiation; truly these termes are not so hard to be got by heart as to be understood, since I beleeve it puzzels the learned to make sense of them. But I beseech you give this Lady so much capacity, as to get them by heart, since every Tub-preacher discourses of them, and every sanctified wife gossips them in wafers, and hipocris at every Christening. Next are the termes of the Philosophers, Certainly 'tis no Conjuration to conceive Atomes, invisible, and indivisible bodies, elements, earth, air, water and fire, whereof your elementary fire under the moon is much doubted of, and then you have but three elements. Motion is a difficult thing indeed, to understand the varietes of it, but certainly not of a body moved, that's no such transcendent thing. Dilation a spreading, Contraction a gathering together Rarification thinning, and Condensation thickning; I confesse in the Latine it seems very learned, but in the English very vulgar, there-fore I beseech you give this Lady leave to have the wit, and the judgement to understand these Great no mysteries. And put the case now that this Lady should name materia prima, and understand the English of it to be first matter, and ask her friend again what they mean by it, and he tells her they say they mean matter without form, and she should answer, there is no matter without some form, so materia prima are two Latine words that mean nothing. An incorporeal substance is too learned to be understood, so that is waved. Now for the termes of Physicians, when she speaks of Choler, Phlegme, Melancholy and Blood, and of Ventricles in the heart and brain, of veines, arteries and nerves, and discourses of fevers, apoplexies, convulsions, Dropsies, and divers other diseases with their particular causes, symptoms and cures; how should this Lady understand these terms say some? truly a good Farmers wife in the country, by seeing one of her sheep opened, may well understand the tearms of most of these, and a Constables wife of a hundred in Essex that useth Physick and Surgery may well talk of the diseases, without any great learned mystery, they are so plain and so common, as none needs to construe Greek in Hippocrates or Galen for them. But would you know how we know the great Mystery of these Physical terms, I am almost ashamed to tell you; not that we have been ever sickly, but by Melancholy often supposed our selves to have such diseases as we had not, and learned Physitians were too wise to put us out of that humour, and so these tearms cost us much more then they are worth, and I hope there is no body so malicious, as to envie our bargain, neither truly do I repent my bargain, since Physitians are the most rationall men I have converst with all, and my worthy and very good friends, and truly this Lady never converst with

any Phyſitian of any diſeaſe, but what ſhe thought ſhe had her ſelf, neither hath ſhe converſt with many of that profeſsion. Now for the great learning of knowing the terms of Geometricians, when this Lady touches upon Triangles, Squares, Circles, Diameters, Circumferences, Centers, lines ſtraight and crooked &c. I will not diſſect theſe great myſteries, becauſe they are ſo very common, as the meaneſt underſtands all theſe termes, even to Joyners and Carpenters, therefore ſurely this Lady is capable of them.

Then of Aſtronomers, ſay they, when ſhe ſpeak's of the Horizon, Meridian, Equator, Zodiack, Ecliptick, Tropicks, Poles of the world &c. When theſe termes are underſtood thats their meaning, they are no ſuch ſubtilties, ſince every boy may be taught them, with an apple for the Globe, and the parings for the ſphears, it is ſo ridiculous then to think that this Lady cannot underſtand theſe tearms, as it is rather to be laught at, then to trouble ones ſelf to anſwer. And that invincible Problem, the quadrature of the circle, as they call it, which makes me doubt that they think themſelves wiſer, for naming the quadrature, then ſquaring the circle, who lives that hath not heard of it, and who lives that can not do it, and who is dead that hath not done it, and put the caſe it were done, what then? why then 'tis ſquared, and that's all, and that all is nothing, much ado about nothing. But we will leave theſe impertinent, malicious, and moſt falſe exceptions to the Lady, and her Books, and will now begin with her book of Poems, examining firſt her Philoſophy there. Thats an old opinion of Atomes, ſay ſome, witneſſe Democrates *and many others; Tis very true they have talkt of atomes, but did they ever diſpoſe of them as they are there, or tell you what ſeveral ſorts there are of them, and what figure they bear, and being joyned, what forms they produce of all kindes, in all things, if you have read any ſuch things before, i'le be bold to burn the Book. Why then all theſe are new opinions, and grounded upon Reaſon, I ſay ſome, but they are Paradoxes, what then? I hope a Paradox may be as true as an old opinion, and an old opinion as falſe as a Paradox, for neither the one nor the other makes a truth, either the new or the old, for what is moſt reaſon & reaſonable; for in natural Philoſophy, one opinion may be as true as another, ſince no body knows the firſt cauſe in nature of any thing. Then this Ladies Philoſophy is excellent, and will be thought ſo hereafter, and the truth is that it was wholy, and onely wrought out of her own brain, as there are many witneſſes, by the ſeveral ſheets that ſhe ſent daily to be writ fair for the preſſe. As for her Poems, where are the exceptions to theſe? marry they miſſe ſometimes in the numbers and in the rimes. It is well known by the copies, that thoſe faults lie moſt upon the Corrector, and the Printer; but put the caſe there might be ſome ſlips in that kinde, is all the book damned for it, no mercy Gentlemen? then for the numbers, every Schoole-boy can make them on his fingers, and for the rimes* Fenner *would have put down* Ben. Johnſon, *and yet neither the boy or* Fenner *ſo good Poets. No, it is neither of thoſe either makes, or condemns a Poet, it is new born and creating Phanſies that glori-*

fies

ſies a Poet, and in her Book of Poems, I am ſure there is excellent, and new Phancies, as have not been writ by any, and that it was onely writ by her is the greateſt truth in the world. Now for her Book called the Worlds Olio, ſay ſome, how is it poſsible that ſhe ſhould have ſuch experience, to write of ſuch things ſo; I anſwer, that I living long in the great world, and having the various fortunes of what they call good and bad, certainly the reading of men might bring me to as much experience as the reading of Books, and this I have now and then diſcourſt unto this Lady, who hath wiſely and elegantly dreſt it in her own way, and ſumptuouſly cloathed it, at the charge of her own Phancies and expreſsions; I ſay ſome of them ſhe hath heard from me, but not the fortieth part of her book, all the reſt are abſolutely her own in all kindes, this is an ingenious truth, therefore beleeve it. As for the Book of her Philoſophical opinions, there is not any one thing in the whole Book, that is not abſolutely ſpun out by her own ſtudious phancy, and if you will lay by a little paſsion againſt writers, you will like it, and the beſt, of any thing ſhe has writ, therefore read it once or twice, not with malice to finde a little fault, but with judgement to like what is good. Truly I cannot beleeve ſo unworthily of any Scholer, honouring them ſo much as we both do, that they ſhould envie this Lady, or ſhould have ſo much malice or emulation, to caſt ſuch falſe aſperſions on her, that ſhe did not write thoſe Books that go forth in her name, they will hardly finde out who elſe writ them, and I proteſt none ever writ them but her ſelf; You ſhould rather incourage her, then by falſe ſuppoſitions to let her ſee the world is ſo ill natured, as to beleeve falſhoods before truths. But here's the crime, a Lady writes them, and to intrench ſo much upon the male prerogative, is not to be forgiven; but I know Gown-men will be more civil to her, becauſe ſhe is of the Gown too, and therefore I am confident you will defend her and truth, and thus be undeceived. I had not troubled you with this, but that a learned Doctor, our very noble friend, writ is word of the infidelity of ſome people in this kinde; whatſoever I have write is abſolutly truth, which I here as a man of Honour ſet my hand to.

W. NEWCASTLE.

TO

TO THE

READER.

IN my Book called the Worlds Olio, there are ſuch groſſe miſtakes in miſplacing of Chapters, and ſo many literall faults, as my book is much diſadvantaged thereby.

As for Chapters, there are many miſplaced, for ſome Chapters that belong to that part of diſeaſes, are miſplaced among thoſe of natural Philoſophy, as one that belongs to ſleep, and three Chapters that are of the temper of Aire; likewiſe another Chapter of the ſtrength of the ſoul and body is placed between the firſt and laſt part of the Common-Wealth, which nothing belongs to it: for though there is a ſoul and body belonging to every Common-Wealth, yet not ſuch a ſoul and body as I have diſcourſt of there.

For the ſoul of a Common-Wealth is Actuall Juſtice, and induſtry.

The ſoul of a man is Contemplation, Reaſon, and imagination.

And the body of a Common-Wealth, is the Citizens therein, and Magiſtrates thereof.

And the body of a man is the ſenſes therein, and the members thereof.

Likewiſe the ſtrength of a Common-Wealth is the Laws.

And the ſtrength of a mans body is the nerves.

Likewiſe a ſhort copie of verſes which is at the latter end of the book, is what I intended for this book, as being my beloved of all my works, prefering it as my maſter-piece, although I do beleeve it will not pleaſe my Readers, becauſe as I have ſaid in ſome of my Epiſtles, few take delight in the ſtudy of Natural Philoſophy, yet thoſe that delight not, or ſlight the ſtudy, or diſpraiſe the work, make it not the leſſe rational, for reaſon will be reaſon in the deſpite of the moſt malicious detractors or ſophiſterian cenſurers, but for the faults and miſtakes in my other works, and perchance the like miſchance may come to theſe, and although I know a paſsion cannot recal an injury paſt: yet I cannnot but grieve at the misfortune, as for a friend that

ſhould

ſhould be hurt or lamed by ſome unhappy accident, but if there be any other faults of indiſcretions in it, I the Author am to be pardoned by reaſon ſomwhat of it was writ in the dawning of my knowledge, and experience, and not having a clear light I might chance to ſtumble in dark ignorance on molehills of errors; not that I accuſe my book of faults; but arm my ſelf with truth againſt crabbed cenſurers. Likewiſe I do not lay all the faults in my book to the Printers or Correctors charge, for that would be ſo great an injuſtce, as I could never forgive my ſelf for the crime, for the Chapters that are miſplaced are through my fault, by reaſon I ſent ſome part of it after the book was in the preſſe, and it ſeems that the Printer or corrector not underſtanding where to place them, put them in a wrong place.

But the literate faults I lay to their charge, whereof I cannot chooſe but complain, for in ſome places it is ſo falſly printed, as one word alters the ſenſe of many lines; whereby my book is much prejudiced, and not onely by putting in falſe words, as a coſtements, for accoutraments, ungrateful for ungraceful, muſter for muſler, and the like; but the ſignificancy of words, to expreſſe a ſingular for a plural; yet I muſt confeſſe that this book is much truer Printed then my book of Poems, for where this book hath one fault, that hath ten; for which I can forgive the Printer, and Corrector ten times eaſier then I did for the other, but ſetting aſide the faults of my book, and complaining thereof, I muſt take the liberty in my own behalf to complain of this ill natured, and unbeleeving age, in not allowing me to be the right Authour thereof; and though it were an endleſſe work to anſwer every idle and impertinent queſtion, or malicious objection; for I am aſſured that rational, wiſe, learned, and juſt perſons will never make a doubt, knowing that nature hath power to temper a brain as ſhe pleaſeth both to receive, retain, diſcuſs, and create, yet for truths ſake I am willing to ſatisfie my worthy readers (if I can) although I had thought I had anſwerd it in my former writings.

But to anſwer thoſe objections that are made againſt me, as firſt, how ſhould I come by ſo much experience, as I have expreſſed in my ſeveral books to have? I anſwer, I have had by relation, the long and much experience of my Lord, who hath lived to ſee and be in many changes of fortunes, and to converſe with many men of ſundry nations, ages, qualities, tempers, capacities, abilities, wits, humors, faſhions and cuſtomes.

And as many others, eſpecially wives go from church to church, from ball to ball, from collation to collation, goſſiping from houſe to houſe, ſo when my Lord admits me to his company, I liſten with attention to his edifying diſcourſe, and I govern my ſelf by his Doctrine; I dance a meaſure with the muſes, feaſt with the Sciences, or ſit and diſcourſe with the arts.

The ſecond is, that ſince I am no Scholer, I cannot know the names and terms of art, and the divers and ſeveral opinions of ſeveral Authors, I anſwer, that I muſt have been a natural fool if I had not known and learnt them, for they are cuſtomarily taught all children from

their

their nurſes breſt being ordinarily diſcourſed of in every family that is of quality, and the family from whence I ſprung are neither natural idiots, nor ignorant fools, but the contrary, for they were rational, learned, underſtanding and wittie.

And when I ſaid I never converſt an hour with profeſſed Philoſophers, for indeed in this age, I have not heard of many which do profeſſe it, or an intimate acquaintance or familiar converſation with profeſt ſcholers, nor ſo much diſcourſe as to learn from them, for three or four viſits do not make an intimacy, nor familiarity, nor can much be learnd therefrom, for viſiting and entertaining diſcourſe, for the moſt part are either cautionary, frivolous, vain, idle, or at leaſt but common and ordinary matter, and moſt commonly all viſiting diſcourſes, are after one and the ſame manner, although the company be ſeveral; but I did not think my readers would have been ſo rigid as to think I excluded my husband, brothers, and the reſt of my family, neither are they profeſt Philoſophers nor Scholers, although they are learned therein, or to beleeve I was ſo ridiculouſly fooliſh, or ſo fooliſhly vain, or ſo baſely falſe as that I ſtrive to make the world to beleeve, I had all my experience and knowledge before I was born, and that my native Language came by inſtinct, and that I was never taught my A, B, C; or the marks and names of ſeveral things; but I hope my book hath more ſpiteful enemies then faults; for I have ſaid in an Epiſtle before the ſecond part of my Olio, that if I had never ſeen nor heard ſo much as I have done, ſhould never have been able to have writ a book.

Thirdly, that I had taken feathers out of the Univerſities to enlarge the wings of my fancy; I anſwer, no more then David *took the wooll from his ſheeps backs to cloath his Poetical Phancies of devotion, or as I may ſay his devout Poetry which is dreſt with ſimuliſing.*

But it hath been known in ſeveral ages, that even poor Peaſents that hear nothing but the blating of ſheep: the lowing of herds, the crowing of cocks, and the like, and their ordinary diſcourſes of nothing but of their market, or the like, have been high flying Poets, politick ſtates men, wiſe Governours, prudent Souldiers, ſubtle Philoſophers, excellent Phyſitians, and what not, even to be eloquent Orators, and Divine preachers, as the holy writ will make manifeſt to us, and I beleeve many more are mentioned in other Hiſtories of leſſe authority; thus we may obſerve that nature is Prevalent in all qualities and conditions; And ſince nature is ſo generous to diſtribute to thoſe that fortune hath caſt out, and education hath neglected, why ſhould my readers miſtruſt nature ſhould be ſparing to me, who have been honourably born, carefully bred, and nobly married to a wiſe man, from whom, as I have ſaid in ſome of my Epiſtles, in my book called the Worlds Olio, and do here ſay again, and again, if it will ſatisfie the Readers that I am my Lords Scholer, and as I have learnt ſo I do daily learn knowledge and underſtanding, wit, and the purity of my language; and let me intreat my Readers to be ſo juſt to me, as not to condemn me for an ideot by their objections and doubts, as not beleeving

I am capable of learning, but let me tell my Readers that what I have learned since I was married, it is from my Lord, and what I had learned before it was from my own familie, as from my own brothers, for my father died when I was young, and not from ſtrangers; for though I have ſeen much company, yet I have converſt with few, and I take converſation to be in talking, which I have not practiſed very much, unleſſe it be to particular friends, for naturally I am ſo wedded to contemplations, that many times when I have been in company, I had not known one word they have ſaid, by reaſon my buſie thoughts have ſtopped the ſenſe of my hearing; and though I prefer the delight of contemplation, before the pleaſure of the ſenſes, yet when the neereſt and deareſt of my friends ſpeak, as my husband, brothers, ſiſters, or their children, my affection is ſuch that I give ſuch an atention to them, as if I had no other thoughts but of what they ſay, or any other ſenſe but hearing; but as I have ſaid of the names and tearms of art, and the ſeveral opinions of the Antients, and the diſtinguiſhment of the ſciences, and the like, I learned them from my neereſt and deareſt friends as from my own brothers, my Lords brother, and my Lord (but having the words and termes of art makes me not a Philoſopher) nor a Poet; and if every one in juſtice ought to have a due, then nature muſt have a ſhare, and truly I will never be ſo ingrateful as not to acknowledge her favours, or to belie her in ſaying ſhe hath not been bountiful to me, for ſhe hath given me ſuch materials, as I hope to build me a monumental fame therewith; but to ſatisfie my Readers, I will tell them as well as I can how I came to know, and underſtand paſſages, all though I never practiſed, or were a ſpectator therein, or thereof; as put the caſe my husband, or brothers ſhould tell me of an Army of horſe and foot, and that two Armies encountred, and fought a battle, and expreſſe the forms and figures, rancks and fiels, the flanck, the wings the vans, the rears, and the like, by which relation to my conceit I ſee it in my brain as perfectly, as if the battle was pitcht, and fought there, and my fancy will build diſcourſe therefrom. Likewiſe if they ſhould tell me all the parts of an Animal body, and how they are formed and compoſed, I conceive it as perfectly to my underſtanding as if I had ſeen it diſſected although I never did and therefore may be deceived in my underſtanding, for truly I have gathered more by piece-meals, then from a full relation, or a methodical education for knowledge; but my fancy will build thereupon, and make diſcourſe therefrom, and ſo of every thing they diſcourſe of, (I ſay they) that is my husband and brothers; For the ſingularity of my affections are ſuch, that though I have an ill memory, and could not if it were for my life relate word for word of any diſcourſe, if it be any thing long that I ſhall hear from ſtrangers, for I am the worſt repeater of a ſtory from ſtrangers, or out of a book in the world, when from my neer friends (eſpecially my Lord) whoſe diſcourſes are lively diſcriptions, I cannot forget any thing they ſay, ſuch deep impreſſions their words print in my brain, when I cannot remember one diſcourſe perfectly from others, were they holy ſermons to ſave my ſoul.

but as I have ſaid from a bare relation, I can conceive to my thinking every particular part, and paſſage, as if I were a witneſſe thereof, or an actor therein; but many things, although I ſhould never have heard of any ſuch thing, yet my natural reaſon will guide and diſcover to me, the right and the truth.

For put the caſe I ſee a watch, or any other invention, and none ſhould tell me how it was made, yet my natural reaſon would conceive how it was made, ſo in natural things my natural reaſon will conceive them without being any wayes inſtructed; and ſo working a brain I have that many times on ſmall objects or ſubjects will raiſe up many ſeveral phancies, and opinions therein, from which my diſcourſe betwixt reaſon and thoſe opinions will be produced; but the truth is, I have more materials to build with, then ground to build on, wherby they become uſeleſſe, but I beleeve time will moulder them to duſt, or accidents, as ſickneſſe may deſtroy them, as dropſies may drown them, fevers may burn them, conſumptions may waſte them, or griefs may wither them, or other imployments like uſurpers may throw it out of my head, but as yet my head is fully populated with divers opinions, and ſo many phancies are therein, as ſometimes they lie like a ſwarm of bees in a round heap, and ſometimes they flie abroad to gather honey from the ſweet flowry rhetorick of my Lords diſcourſe, and wax from his wiſe judgement which they work into a comb making chapters therein. But thoſe that make theſe and the like idle objections againſt me either have not read all my Epiſtles, and the reſt of my books or underſtands them not, but that is not my fault, but their unjuſt natures, to cenſure and condemn before they examine or underſtand; Nay they do in ſomethings faulſely, accuſe, and maliciouſly break out of ſome of my Epiſtles ſome parts to throw againſt me, which is moſt baſe and cruel to diſmember my book tormenting it with ſpiteful objections, misforming the truth with falſhood: but thoſe that have noble and generous ſouls will beleeve me, and thoſe that have baſe and mechannick ſouls, I care not what they ſay, and truly I would not have troubled my ſelf in ſtriving to ſatisfie this preſent age which is very cenſorious; but fear the future age wherein I hope to live, may be deceived, and I by falſe conſtructions wronged; for I have obſerved that the ignorant, and malicious, do ſtrive to diſturb, and obſtruct all probable opinions, wittie ingenuities, honeſt induſtry, vertuous indeavours, harmleſſe phancies, innocent pleaſures, and honourable fames although they become infamous thereby.

Readers I had forgotten to mention the objection, that there is no diſtinction between a ſcholer, and a Philoſopher, if they mean as being vulgarly called both ſcholers

I anſwer a ſcholer is to be learnd in other mens opinions, inventions and actions, and a philoſopher is to teach other men his opinions of nature, and to demoſtrate the works of nature, ſo that a ſcholer is to learn a Philoſopher to teach, and if they ſay there is no diſtinction between a profeſt ſcholer, and a profeſt philoſopher, I am not of their opinion; for a profeſt ſcholer in theologie, is not a profeſt Philoſopher; for Divines leave nature on the left hand, and walk on the right to things ſupernatural

pernatural, and if they mean profeſt ſcholers, as being bred at univerſities (I anſwer) that I take not all thoſe that are bred at an Vniverſity, and thoſe that are learned to be profeſt ſcholers, or thoſe that are great Philoſophers to be profeſt, unleſſe they make it their profeſſion, as a profeſt Divine that hath taken Orders, or a profeſt Phyſitian that hath commenced Doctor, or profeſt Pleaders, or Lawyers that are made Barreſters, or Philoſophers, that teach Scholers; but certainly there are many that are very learned that are not profeſt, as being of that profeſsion by which they live.

Likewiſe an objection for my ſaying I *have not read many Books; but* I *anſwer, for not reading of many Authors, had* I *underſtood ſeveral Languages, as* I *do not, , I have not had ſo much time; had* I *indeavoured to have been learned therein, for learning requires cloſe ſtudies, long time, and labour.*

Beſides, our ſex takes ſo much delight in dreſsing and adorning themſelves, as we for the moſt part make our gowns our books, our laces our lines, our imbroderies our letters, and our dreſsings are the time of our ſtudie; and inſtead of turning over ſolid leaves, we turn our hair into curles, and our ſex is as ambitious to ſhew themſelves to the eyes of the world, when finely dreſt, as Scholers do to expreſſe their learning to the ears of the world, when fully fraught with Authors.

But as I have ſaid my head was ſo full of my own natural phancies, as it had not roome for ſtrangers to boord therein, and certainly natural reaſon is a better tutor then education; for though education doth help natural reaſon to a more ſudden maturity, yet natural reaſon was the firſt educator; for natural reaſon did firſt compoſe Common-Wealths, invented arts, and ſciences, and if natural reaſon have compoſed, invented and diſcoverd, I *know no reaſon, but natural reaſon may finde out what natural reaſon hath compoſed, invented, and diſcovered, without the help of education; but ſome may ſay that education is like mony n put to uſe, which begets increaſe;* I *ſay it is true, but natural reaſon is the principal, which without increaſe could not be, but in truth natural reaſon, is both the principal and the increaſe, for natural reaſon produceth beneficial effects, and findes out the right and the truth, the wrong and the falſhood of things, or cauſes; but to conclude, what education hath not inſtructed me, natural Reaſon hath infor med me of many things.*

TO THE

TWO UNIVERSITIES.

Moſt Famouſly learned,

I Here preſent the ſum of my works, not that I think wiſe School-men, and induſtrious, laborious ſtudents ſhould value my book for any worth, but to receive it without a ſcorn, for the good incouragement of our ſex, leſt in time we ſhould grow irrational as idiots, by the dejectedneſſe of our ſpirits, through the careleſſe neglects, and deſpiſements of the maſculine ſex to the effeminate, thinking it impoſsible we ſhould have either learning or underſtanding, wit or judgement, as if we had not rational ſouls as well as men, and we out of a cuſtom of dejectedneſſe think ſo too, which makes us quit all all induſtry towards profitable knowledge being imployed onely in looe, and pettie imployments, which takes away not onely our abilities towards arts, but higher capacities in ſpeculations, ſo as we are become like worms that onely live in the dull earth of ignorance, winding our ſelves ſometimes out, by the help of ſome refreſhing rain of good educations which ſeldom is given us; for we are kept like birds in cages to hop up and down in our houſes, not ſufferd to fly abroad to ſee the ſeveral changes of fortune, and the various humors, ordained and created by nature; thus wanting the experiences of nature, we muſt needs want the underſtanding and knowledge and ſo conſequently prudence, and invention of men: thus by an opinion, which I hope is but an erronious one in men, we are ſhut out of all power, and Authority by reaſon we are never imployed either in civil nor marſhall affaires, our counſels are deſpiſed, and laught at, the beſt of our actions are troden down with ſcorn, by the over-weaning conceit men have of themſelves and through a diſpiſement of us.

But I conſidering with my ſelf, that if a right judgement, and a true underſtanding, & a reſpectful civility live any where, it muſt be in learned Univerſities, where nature is beſt known, where truth is oftneſt found, where civility is moſt practiſed, and if I finde not a reſentment here, I am very confident I ſhall finde it no where, neither ſhall I think I deſerve it, if you approve not of me, but if I deſſerve

not

not Praiſe, I am ſure to receive ſo much Courtſhip from this ſage ſociety, as to bury me in ſilence; thus I may have a quiet grave, ſince not worthy a famous memory; but to lie intombed uuder the duſt of an Univerſity will be honour enough for me, and more then if I were worſhipped by the vulgar as a Deity. Wherefore if your wiſdoms cannot give me the Bayes, let your charity ſtrow me with Cypres; and who knows but after my honourable burial, I may have a glorious reſurrection in following ages, ſince time brings ſtrange and unuſual things to paſſe, I mean unuſual to men, though not in nature: and I hope this action of mine, is not unnatural, though unuſual for a woman to preſent a Book to the Univerſity, nor impudence, for the action is honeſt, although it ſeem vain-glorious, but if it be, I am to be pardoned, ſince there is little difference between man and beaſt, but what ambition and glory makes.

AN

AN

EPILOGE

TO MY

PHILOSOPHICAL OPINIONS.

Some ſay that my Book of Philoſophy, it ſeems as if I had converſt with Des-Cartes *or Maſter* Hobbes, *or both, or have frequented their ſtudies, by reading their works, but I cannot ſay but I have ſeen them both, but upon my conſcience I never ſpake to monſieur* De Cartes *in my life, nor ever underſtood what he ſaid, for he ſpake no Engliſh, and I underſtand no other language, and thoſe times I ſaw him, which was twice at dinner with my Lord at* Paris, *he did appear to me a man of the fewеſt words I ever heard. And for Maſter* Hobbes, *it is true I have had the like good fortune to ſee him, and that very often with my Lord at dinner, for I converſing ſeldom with any ſtrangers, had no other time to ſee thoſe two famous Philoſophers; yet I never heard Maſter* Hobbes *to my beſt remembrance treat, or diſcourſe of Philoſophy, nor I never ſpake to Maſter* Hobbes *twenty words in my life,* I *cannot ſay I did not ask him a queſtion, for when I was in* London *I meet him, and told him as truly I was very glad to ſee him, and asked him if he would pleaſe to do me that honour to ſtay at dinner, but he with great civility refuſed me, as having ſome buſineſſe, which I ſuppoſe required his abſence.*

And for their works, my own fooliſh fancies do ſo imploy my time, as they will not give me leave to read their books, for upon my conſcience I *never read more of Mounſieur* Des-Cartes *then half his book of paſſion, and for Maſter* Hobbes, *I never read more then a little book called De Cive, and that but once, nor never had any body to read to me, as for their opinions, I cannot ſay I have not heard of many of them. As the like of others, but upon my conſcience not throughly diſcourſed of, for I have heard the opinions of moſt Philoſophers in general, yet no otherwaies then if I ſhould ſee a man, but*

neither

neither know his eſtate, quality, capacity, or natural diſpoſition, thus upon my conſcience is a truth, not onely in theſe two Philoſophers, but all Philoſophers, and not onely Philoſophers, but all their learned men, ſo that I am no otherwayes learned in writers works, or other opinions then thoſe that onely learned the tearms of arts, and ſciences, but know no more. The like they may ſay of Phyſitians, as of Philoſophers, when they read my opinions of diſeaſes; it is true I have converſt with Phyſitians more then any other learned profeſſion, yet not ſo much as to increaſe my underſtanding, although more then was advantagious for my health, indeed I have been the worſt Phyſitian to my ſelf; beſides wiſe learned men think it a diſcredit to diſcourſe learnedly to ignorant women, and many learned men ſpeak moſt commonly to women, as women do to children nonſenſe; as thinking they underſtand not any thing, or elſe like thoſe that are of another Language ſpeak ſuch gibbriſh, to thoſe they would have underſtood that they underſtand not themſelves yet think thoſe they ſpeak to do conceive them, as if ignorance was bound to underſtand nonſenſe, that is not to be underſtood; but I deſire my Readers, or cenſurers; for ſome will cenſure that have not read, or at leaſt not underſtood me, that I did never take nor ſteal any opinion, or argument from any other as my own, nor never will, and if I hit or light upon the ſame, it is meer chance. Tis true, I have mentioned many opinions, but not as my own opinions or arguments, but rather, though civilly I have been oppoſite to thoſe opinions I have heard of, and I make no queſtion but if my Readers will take the paines to compare my writings to others, and throughly examine them, they will I make no queſtion, finde great difference; for though other Philoſophy have treated of matter, form, and motion, being the fundamental ground, of all all natural Philoſophical diſcourſe, yet I believe not my way, nor I never read any book of diſeaſes, or medicines, but Gerrards Herball, which no queſtion is a very rare book, and cetainly diſcribes the tempers of herbs, fruits, and drugs very learnedly, but I do verily beleeve the learning lies more in the tempers then in the applications; for I beleeve where one is rightly applied, forty are falſly applied, and how ſhall it be otherwaies, unleſſe he had ſtudied the motions and tempers of diſeaſes; for one and the ſame diſeaſes may be of ſeveral tempers, and motions, wherefore one and the ſame ſimple will not cure one and the ſame kinde, or rather ſort of diſeaſe; Wherefore I beſeech my readers to be ſo charitable, and juſt, as not to bury my works in the monuments of other writers, but if they will bury them, let it be in their own duſt, or oblivion, for I had rather be forgotten, then ſcrape acquaintance, or inſinuate my ſelf into others company, or brag of received favours, or take undeſerved gifts, or belie noble Benefactors, or to ſteal, although I were ſure the theft would never be diſcovered, and would make me live eternally.

But I have no acquaintance with old Authors, nor no familiarity with the moderns, I have received no inſtructions by learning, and I never owned that which was not juſtly my own, nor never ſtole that which was juſtly anothers, neither have I retained, but plain truth to defend, and conſcience to witneſſe for me.

Beſides

Beſides, I have heard that learning ſpoiles the natural wit, and the fancies, of others, drive the fancies out of our own braines, as enemies to the nature, or at leaſt troubleſome gueſts that fill up all the rooms of the houſe.

This opinion, or rather a known truth, was a ſufficient cauſe for me, neither to read many Books, or hear arguments, or to diſpute opinions, had I ever been edicted to one, or accuſtomed to the other, by reaſon I found a naturall inclination, or motion in my own brain to fancies, and truly I am as all the world is, partial, although perchance, or at leaſt I hope not ſo much as many are, yet enough to deſire that my own fancies, and opinions might live in the world, rather then the fancies and opinions of other mens in my brain.

AN

OF

MATTER

AND

MOTION

CHAP. I.

THERE is no *first matter*, nor *first Motion*; for *matter* and *motion* are *infinite*, and being *infinite*, must consequently be *Eternal*; and though but *one matter*, yet there is no such thing, as the *whole matter*, that is, as one should say, *All*. And though there is but one *kinde* of *matter*, yet there are *infinite degrees* of *matter*, as *thinner* and *thicker*, *softer* and *harder*, *weightier*, and *lighter*; and as there is but one *matter*, so there is but *one motion*, yet there are *infinite degrees of motion*, as *swifter* and *slower*; and *infinite changes of motion*; And although there is but one *matter*, yet there are *infinite* of *parts* in that *matter*, and so *infinits* of *Figures*: if *infinite figures*, *infinite sizes*; if *infinite sizes*, *infinite degrees* of *bignesse*, and *infinite degrees* of *smalnesse*, *infinite thicknesse*, *infinite thinnesse*, *infinite lightnesse*, *infinite weightinesse*; if *infinite degrees* of *motion*, *infinite degrees* of *strengths*; if *infinite degrees* of *strengths*, *infinite degrees* of *power*, and *infinite degrees* of *knowledge*, and *infinite degrees* of *sense*.

Chap. 2. *Of the* Form *and the* Minde.

I mean of Form, dull Matter.

AS I said, there is but *one Matter*, thinner and thicker which is the *Form*, and the *Minde*, that is, *Matter moving*, or *Matter moved*; likewise there is but one *motion*, though

though ſlower or ſwifter moving ſeveral wayes; but the ſlower or weaker motions are no leſſe motion, then the ſtronger or ſwifter. So *Matter* that is is thinneſt or thickeſt, ſofteſt or hardeſt, yet is but *one matter*; for if it were divided by *degrees*, untill it came to an *Atome*, that *Atome* would ſtill be the ſame *matter*, as well as the greateſt bulk. But we cannot ſay ſmalleſt, or biggeſt,, thinneſt, ſofteſt or hardeſt in *Infinite*.

Chap. 3. *Eternal matter.*

THat *matter* which was *ſolid*, and weighty from all *Eternity*, may be ſo eternally; and what was *ſpungie*, and light from all Eternity, may be ſo eternally; and what had innate motion from Eternity, may be ſo eternally; and what was dull without innate motion from Eternity, may be ſo eternally: for if the *degrees* could change, then there might be all thin, and no thick, or all thick, and no thin, all hard, no ſoft, and fluid, or all fluid, and no ſolidity. For though contracting and dilating may bring and joyn *parts* together, or ſeparate parts aſunder, yet thoſe *parts* ſhall not be any other wayes, then by Nature they were.

Chap. 4. Of *Infinite matter.*

INfinite matter cannot have exact *Form*, or *Figure*, becauſe it hath no *Limits*: but being divided by *motion* into ſeveral parts, thoſe *Parts* may have perfect *Figures*, ſo long as thoſe *Figures* laſt; yet theſe *parts* cannot be taken from the *Infinite Body*. And though parts may be divided in the *Body Infinite*, and joyned ſeveral wayes, yet *Infinite* can neither be added, nor diminiſhed; yet diviſion is as *infinite* as the *matter divided*.

Chap. 5. *No proportion in Nature.*

IN *Nature* there is no ſuch thing, as *Number* or *Quantity*; for *Number*, and *Quantity* have onely reference to *diviſion*: neither is there any ſuch thing as *time* in *Eternity*; for *Time* hath no reference but to the *Preſent*, if there be any ſuch thing as *Preſent*.

Chap. 6. *Of one* Kinde *of* Matter.

ALthough there may be *infinite degrees of matter*, yet the *Nature*, and *kinde of matter* is *finite*: for *Infinite* of *ſeverall kindes of matter* would make a *Confuſion*.

Chap. 7. Of *Infinite knowledge.*

THere can be no abſolute *Knowledge*, if *infinite degrees of Knowledge*; nor no *abſolute power*, if there be *infinite degrees of ſtrength*: nor *preſent*, if infinite degrees of motion.

No

Chap. 8. *No* Judge *in* Nature.

NO *Intreaty*, nor *Petition* can perſwade *Nature*, nor any Bribes can corrupt, or alter the courſe of nature: Juſtly there can be no complaints made againſt *Nature*, nor to *Nature*. *Nature* can give no redreſſe. There are no Appeals can be made, nor *Cauſes* determined, becauſe *Nature* is infinite, and *eternal*: for *Infinite* cannot be confined, or preſcribed, ſetled, rul'd, or diſpoſ'd, becauſe the *Effects* are as *infinite* as the *Cauſes*: and what is infinite, hath no abſolute power: for what is *abſolute*, is finite.

Finite cannot tell how *Infinite* doth flow,
Nor how *infinite matter* moveth to and fro.
For *infinite* of *Knowledge* cannot gueſs
Of *infinite* of *matter*, more, or leſſe:
Nor *infinite* of *Cauſes* cannot finde
The *infinite Effects* of every Kinde.

Chap. 9. *Of* Perfection.

IN *infinite* can no perfection be,
For why? *Perfection* is in *Unity*.
In *infinite* no *union* can combine,
For that has neither *Number*, *point* nor *Line*;
Though *infinite* can have no *Figure*,
Yet not lie all confuſ'd in heaps together

Some think there was a *Chaos*, a confuſed Heap.

Chap. 10. Of Inequalities.

IF *infinites* have *infinite* degrees,
And none alike to make Equalities.
As if a *Haire* be cut with curious Arts,
Innumerable but unequal parts,
And that not any part alike ſhall be,
How ſhall we joyn, to make them well agree?
If every one is like it ſelf alone,
Three cannot be, unleſſe three equal *One*.

If *one*, and *one* make *two*; and two, and *two* make *four* yet there muſt be *two equal ones* to make *two*, and *two equal two's* to to make *four*. And as *two* and *one* make *three*, yet there muſt be *two equal ones* joyned to a *ſingle one*, to make *three*, or *three equal ſingle ones* to joyn in *three*.

The like is in weight, and Meaſure, Motion and Strength.

Chap. 11. *Of* Unities.

IN *infinite* if *infinite degrees*,
Then thoſe *Degrees* may meet in *Unities*.
And if *one man* ſhould have the ſtrength of four,
Then *four* to equal him will be no more.
As if *one* Line ſhould be in *four* parts cut,
Shall *equal* the *ſame Line* together put;
So *two* and *one*, though odd is theer;
Yet *three* and *three* ſhall equal be.
Like thoſe that equal ſpaces backwards go,
To thoſe that's forward, equals them we know.
Like Buckets in a Well if empty be,
As one deſcends, the other aſcends, we ſee;
So *Motions*, though their croſſe, may well agree,
As oft in Muſick make a Harmony.

Chap. 12. *There is no* Vacuity.

IN Nature if *Degrees* may equal be,
All may be full, and no Vacuity.
As Boxes ſmall, and ſmaller may contain,
So bigger, and bigger muſt there be again.
Infinite may run contracting, and dilating,
Still, ſtill, by degrees without a ſeparating.

Chap. 13. *Of* Thin, *and* Thick Matter.

THus may *thin Matter* into Solid run,
And by its motion,, make *thick Matter turn*
In ſeveral wayes, and faſhions, as it will,
Although *dull Matter* of it ſelf lie ſtill:
Tis not, that *Solid Matter* moves in Thin,
For that is *dull*, but *thin* which moves therein.
Like Marrow in the Bones, or Blood in Veins;
Or thinner matter which the blood contains.
Like Heat in Fire, the effect is ſtraight to burn,
So *Matter thin* makes ſolid *matter* run.

Chap. 14. *Of* Vacuum.

The Readers may take either Opinion.

IF *Infinite inequalitie* doth run,
Then muſt there be *in Infinite Vacuum*.
For what's *unequal*, cannot joyned be
So cloſe, but there will be *Vacuity*.

Chap. 15. *The* Unity *of* Nature.

NAture tends to *Unity*, being but of a kinde of Matter, but the *degrees* of this Mattter being thinner, and thicker, ſofter,

ſofter, and harder, weightier, and lighter, makes it, as it were, of different kinde, when tis but *different degrees:* Like ſeveral *extractions*, as it were out of one and the ſame thing; and when it comes to ſuch an *Extract*, it turns to *Spirits*, that is, to have an *Innate motion*.

Chap. 16. *Of* Diviſion.

THe ſeveral degrees of Matter cauſe *Diviſion* by *different motion*, making ſeveral *Figures*, erecting, and diſſolving them, according as their *matter* moves. This makes *motion* and *Figure* alwayes to be in War, but not the *matter*; for it is the ſeveral *effects* that diſagree, but not the *Cauſes*: for the *Eternal matter* is alwayes in peace, as being not ſubject to change; but *motion* and *Figure*, being ſubject to *Change*, ſtrive for *Superiority*: which can never be, becauſe ſubject to *Change*. Several Motions, and ſeverall Figures

Chap. 17. *The* Order *of* Nature.

THe Reaſon, that there is not a *Confuſion* in *Nature*, but an orderly Courſe therein, is, the *Eternal matter* is alwayes *one*, and the *ſame*: for though there are *Infinite degrees*, yet the *Nature* of that *Matter* never alters. But all variety is made according to the ſeveral *Degrees*, and the ſeveral degrees do palliate and in ſome ſenſe make an *Equality* in *infinite*; ſo as it is not the *ſeveral degrees* of *matter*, that ſtrive againſt each other, but *ſeveral motions* drive them againſt one another.

Chap. 18. *Of* War, *and no abſolute* Power.

THe Reaſon that all things make War upon one another, is, the ſeveral (*) *Degrees* of *matter*, the contradiction of *motion*, and the Degrees, and the *advantage* of *the ſhapes* of (*) *Figures* alwayes ſtriving. (*) Not the *Matter*, but the *Degrees*. (*) Not the Bigneſſe of Figures, but the manner of ſhapes: which makes ſome ſhapes to have the advantage over others much bigger, as a Mouſe will kill an Elephant.

Chap. 19. *Of* Power.

THere is no *abſolute* Power, becauſe *Power* is *infinite*, and the *infiniteneſſe* hinders the abſoluteneſſe: for if there were an *abſolute power*, there would be no diſpute: but becauſe there is no *abſolute power*, there would be no diſpute; but becauſe there is no *abſolute power*, therefore there be Diſputes, and will be eternally: for the ſeveral degrees of *matter*, *motion*, and *Figure* ſtrive for the Superiority, making *Faction* by (*) *Sympathy*, and Fraction, by (*) Antipathy. (*) Which is in Likeneſſe. (*) Unlikeneſſe.

Similizing

Chap. 20. Similizing *the* ſpirits, *or* Innate Matter.

THe *Spirits*, or *Eſſences* in *Nature* are like Quick-ſilver: for ſay it be *fluid*, it will part into little *Sphærical Bodies*, running about, though it be nere ſo ſmall a Quantity: and though they are *Sphærical*, yet thoſe *Figures* they make by ſeveral, and ſubtle motion, may differ variouſly, and Infinitely.

This *innate matter* is a kinde of *god* or *gods* to the *dull part of matter*, having power to form it, as it pleaſe, and why may not every degree of *Innate matter* be as ſeveral *gods*, and ſo a *ſtrong motion* be a god to the *weaker*, and ſo have an *infinite*, and *Eternal Government*? As we will compare *motions* to *Officers*, or *Magiſtrates*. The *Conſtable* rules the *Pariſh*, the *Mayor*, the Conſtable, the King the Mayor, and ſome *Higher power* the *King*: thus *infinite powers* rule *Eternity*. Or again thus, the *Conſtable* rules the *Hundred*, the *Major* rules the *City*, the *King* the *kingdom*, and *Cæſar* the *world*.

Thus may *dull matter* over others rule,
According as 'tis * ſhap'd by *motions Tool*.
So *Innate matter* Governs by degree,
According as the *ſtronger motions* be.

One *Shape* hath power over another; one *Minde* knowes more then another.

Chap. 21. *Of* Operation.

ALL things in the world have an *Operative power*; which *Operation* is made by *Sympathetical motions* & *Antipathetical motions*, in ſeveral *Figures*. for the *aſſiſting Operation* is cauſed by *one*, the *deſtructive Operation* by another; like Poyſon and cordials, the one kills, the other cures: but *Operations* are infinite, as *motions*.

Chap. 22. Natural, *or* Senſivtie War.

ALL *Natural War* is cauſed either by a *Sympathetical motion*, or an *Antepathetical motion*. For *Natural War*, and *Peace* proceed from Self-preſervation, which belongs only to the *Figure*; for nothing is annihilated in *Nature*, but the particular prints, or *ſeveral ſhapes* that *motion* makes of *matter*; which *motion* in every *Figure* ſtrives to maintain what they have created: for when ſome *Figures* deſtroy others, it is for the maintenance or ſecurity of themſelves: and when the deſtruction is for Food it is *Sympathetical motion*, which makes a particular Appetite, or nouriſhment from ſome *Creatures* to others; but an *Antipathetical motion* that makes the *Deſtruction*.

Chap. 23. *Of* Annihilation.

THere can be no *Annihilation* in *Nature*: nor particular *motions*, and *Figures*, becauſe the *matter* remains that was the

cauſe

Cauſe of thoſe *Motions* and *Figures*. As for *particular figures*, although every *part* is ſeparated that made ſuch a *figure*, yet it is not *Annihilated*; becauſe *thoſe parts remain* that *made it*. So as it is not impoſſible but the ſame particular Figures may be erected by the ſame *motions*, that joyned thoſe parts, and in the *matter* may repeat the ſame *motion eternally ſo by ſucceſſion*: and the ſame *matter* in a *figure* may be erected and diſperſed eternally. Thus the diſperſing of the *matter* into particular figures by an *Alteration of motion*, we call *Death*; and the joyning of parts to create a *Figure*, we call life. *Death* is a *Separation*, *life* is a *Contraction*.

Either by Growth, or Senſe, or Reaſon.

Chap. 24. LIFE.

Life is the *Extract*, or *ſpirit* of *common matter*: (*) this *extract* is Agile, being alwayes in motion; for the Thinneſſe of this *matter* cauſes the ſubtilty of the Quality, or property, which quality, or preporty is to work upon all dull *Matter*.

For when Matter comes to ſuch a degree, it quickens.

This *Eſſence*, or *life*, which are Spirits of ſenſe, move of themſelves: for the dull part of Matter moves not, but as it is moved thereby.

Their common motions are four. } Atractive. Retentive. Digeſtive. Expulſive.

Attractive is that which we call *Growth*, or *youth*. *Retentive*, is that we call *ſtrength*. *Digeſtive* is that we call *Health*, that is an equal diſtribution of parts to parts, and agreeing of thoſe ſpirits. *Expulſive* is that which we call *Death*, or *decay*.

That it begins to move, and Motion is Life.

The *Attractive ſpirits* gather, and draw the materials together.

The *Digeſtive ſpirits* do cut and carve out every thing.

The *Retentive* do fit, and lay them in their proper places.

The *Expulſive* do pul down, and ſcatter them about.

Thoſe *ſpirits* moſt commonly move according to the matter they work on. For in ſpung and porous light matter, their *motion* is quick; in ſolid, and weighty, their *motion* is ſlower. For the ſolid parts are not onely dull, and immoveable of themſelves, but they hinder and * obſtruct thoſe Spirits of ſence, and though they cut and pierce through all, yet it is with more labour, and ſlower motion; for their motions change according to the quantity and quality of that matter they meet with; for that which is porous and ſpungy, the Figures that they form that *matter* in, are ſooner made, and ſudenlier deſtroyed, then that which is more combuſtible. This is the reaſon, Minerals laſt longer then *Vegetables*, and

* I mean when I ſay Obſtruct, that it either turns their motion another way or makes them move ſlower.

and *Animals*, becauſe that matter is both tougher and harder to work on, then *Vegetables* and *Animals* are.

Theſe *Senſitive* ſpirits we may ſimilize to ſeveral workmen, being alwayes buſily imployed, removing, lifting, carrying, driving, drawing, digging, and the like. And although theſe ſpirits are of ſubſtance thinner then dull matter, yet they are ſtronger by reaſon of their ſubtility, and motion, which motion gives them power: for they are of an acute quality, being the *Vitriol*, as it were, of *Nature*, cut and divide all that oppoſeth their way.

Now theſe *ſpirts*, though they be *infinite*, yet we cannot think them ſo groſſe an infinite, as combuſtible matter, yet thoſe thinner *infinites* may cut, and carve the thicker infinites all into ſeveral *figures*: like as *Aqua-fortis* will eat into the hardeſt iron, and divide it into ſmall parts.

As I have ſaid before, the *ſpirits of life* works according as the *matter* is, for every thing is ſhap'd according to the ſolidity of the *matter*; like as a man which builds a houſe of ſuch wood, which is tough, and ſtrong, becauſe he knows otherwiſe it will break, by reaſon of the great weight they are to bear, but to make laths, he takes his wood and cuts it thin, that the nails may the eaſier paſſe through, ſo joyning and fitting ſeveral ſorts to proper uſes to build his houſe. Or like a *Cook*, when he's to raiſe a pie, muſt take ſtiff Dough; for otherwiſe it will not onely fall before it be finiſhed, but it cannot be raiſed, and to make the lids to cover his pye, he muſt uſe a ſofter Paſte, otherwiſe it will not rowl thin; thus a ſtiff paſte is not fit for a lid, nor a thinner paſte for to raiſe a Pye; it may make a Cake, or ſo. So the *ſpirts* of *life* muſt make *figures*, as the *matter* is fit: and proper therto, for the *figure* of man or the like; the *ſpirits* of life take the ſolid and hard *matter* for the * *Bones*: the Glutinous *matter* for the Sinews, Nerves, Muſcles, and the like; and the *Oyly matter*, for Fleſh, Fat, Marrow. So the *fluid* for Blood, and ſuch like *matter*. and the ſpirits themſelves do give this dull matter, *motion*, not onely in the building of the *figure*, but to make the *figure* move when it is built.

* I do not ſay that bones are the ſolid'ſt matter in Nature.

Now the *ſpirits* of *life*, or *lively ſpirits* do not onely move dull and immoving *matter*, but makes that *matter* to move and work upon others; for ſome kinde of *figures* ſhall make * another to reſemble it ſelf, though not juſt be as it ſelf is made, but as the ſhadow like the ſubſtance; for it works as a *hand* that is guided by another, and not of its own ſtrength: that is the reaſon, *Arts* have not ſo much perfection as *nature*. The *Copy* is not ſo lively as the *Original*; for the ſpirits of life move, and work of their own ſtrength, and the dul *matter* by the ſtrength of the *ſpirits*.

* As the figure of man.

Chap.

Chap. 25. *of* CHANGE.

THe *Change* of *motion* in ſeveral *Figures* makes all *change* and difference in the World, and their ſeveral properties and effects thereto. And that which we call *Death*, or *corruption*, is not * an abſence of *life*, but an *expulſive motion* which doth *annihilate* thoſe *figures*, that erecting *motion* hath made. So *death* is an *annihilation* of the *Print*, not of the *Mould* of *figures*; for the *Moulds* of thoſe *figures* of Mankinde, Beaſt, or Plant, of all kindes whatſoever, ſhall never be *annihilated* ſo long as *motion* and *matter* laſt, which may alwayes be; for the *mould* of all *figures* is in the power of *motion*, and the ſubſtance of *matter*.

* *All Motion is Life.*

Chap. 26. *of* Youth, *or* Growth.

THus *Spirits* of *ſenſe* work according to the ſubſtance of the *matter*: for if the *matter* be porous and light, they form thoſe *figures* quicker, and diſſolve them ſuddenly: But if their *matter* be ſolid and hard, they work ſlower, which makes ſome *figures* longer ere they come to *perfection*, and not ſo eaſily undone. And if their ſtrength be too weak for the *matter* they work upon, as wanting help, then the *figure* is imperfect, and miſhapen, as we ſay. This is the reaſon *Animals* and *Vegetables*, which are yong, have not ſo great ſtrength as when they are full grown; becauſe there are fewer *ſpirits*, and the *materials* are looſe and unſetled, not knockt cloſe: But by degrees more *ſpirits* gather together, which help to forward their work, bring in *materials* by *food*, ſetling them by *nouriſhment*, carrying out by *Evacuations* that *matter* that is unuſeful, and that Rubbiſh and Chips, as I may ſay, which would hinder their *motion*. If they bring in unuſeful *matter*, their *figure* increaſes not, as we ſay, thrives not. And if they carry out the principal *materials*, the *figure* decayes, and falls down. But thoſe parts of *matter* which are not *ſpirits*, do not carry that part of *matter* which is *ſpirit*, but theſe *ſpirits* carry the dull *matter*. Thus the *ſpirits*, the *innated matter*, move in dull *matter*, and dull *matter* moveth by the *ſpirits*; and if the *matter* be fine, and not groſs, which they build withal, and their *motion* be regular, then the *figure* is beautiful and well proportioned.

Chap. 27. *Of* Increaſing.

THe reaſon that the *corruption* of one *figure* is the cauſe of making of *another* of the ſame *kinde*, is, not onely, that it is of ſuch a *tempered matter* that can onely make ſuch a kinde of *figure*; but that the *ſpirits* make *figures* according to their ſtrength: So that the *ſpirits* that are in the *Seed*, when they have undone the *figure* they are in, by a general expulſion, which we call *corruption*, they begin to create again another *figure* of the

I mean the Figure of dull matter.

ſame kinde, if no greater power hinder it. For the *matter* that is proper, to make ſuch like *figures*, is fitted, or temper'd to their ſtrengths. So as the *Temper* of the *matter*, and the *ſtrength* of the *ſpirits*, are the *Erectors* of thoſe *figures* eternally. And the reaſon, that from one *Seed*, leſs, or more Numbers are increaſed and rais'd, is, that though *few* begin the work, *more* will come to their help; and as their *numbers* are increaſed, their *figures* are more, or leſs, weaker, or ſtronger.

Chap. 28. *Of* Decay.

As a plentiful Crop or a great Brood.

When *Spirit* of *Life* have created a *Figure*, and brought it to perfection; if they did not pull it down again, they would be idle, having no work to do; and Idleneſs is againſt the *nature* of *life*, being a perpetual *motion*. For as ſoon as a *figure* is perfected, the *ſpirits* generally move to an *expulſive motion*. This is the reaſon, that *Age* hath not that ſtrength as *full-growth*: But like an old houſe falling down by degrees, ſhed their Haires, or Leaves, inſtead of Tiles, the Windows broke down, and ſtopped with Rubbiſh.

So *Eyes* in *Animals* grow hollow and dim. And when the Foundation of a houſe is looſe, every little winde ſhakes it. So when the *Nerves* being ſlack, and the *Muſcles* untied, and the *Joynts* unhing'd, the whole *Body* is weak, and tottering, which we call *Palſies*: which *Palſies*, as the winde, ſhakes.

The *Bloud*, as the *Springe* dries up, *Rhumes*, as *Rain* falls down, and *Vapours*, as *Duſt*, flie up.

Chap. 29. *Of* Dead, *and* Death.

Dead is, where there is a *General Alteration* of ſuch *Motion*, as is proper to ſuch *Figures*. But *Death* is an *Annihilation* of that *Print*, or *Figure*, by an *Expulſive Motion*: And as that *Figure* diſſolves, the *Spirits* diſperſe about, carrying their ſeveral burdens to the making of other *Figures*. Like as a houſe that is ruin'd by *Time*, or ſpoyled by accident; the ſeveral *Materials* are imployed to other uſes; ſometimes to the building of an houſe again. But a houſe is longer a building then a pulling down, by reaſon of the cutting, carving, laying, carrying, placing, and fitting every part to make them joyn together; ſo all the works of *Nature* are ſooner diſſolv'd then created.

Chap. 30. *Of* Local Shapes.

Some *Shapes* have power over others, but 'tis not alwayes in the ſize, or bulk of the *Figure*, but in the manner of their *Formes* that give advantage, or diſadvantage. A little Mouſe will run through the Snowt of a great Elephant: A little Flye will ſting a great *Figure* to death; A Worm will wind through a thick

a thick Body; The Lions force lies in his Claws; The Horſes in his Hoof; The Dogs in his Teeth; The Bulls in his Horns; and Mans in his Armes, and Hands; Birds in their Bills, and Talons: And the manner of their *Shapes* gives them ſeveral properties, or faculties. As the *Shape* of a Bird cauſes them to *flye*, a Worm to *creep*, the *Shape* of a Beaſt to *run*, the *Shape* of Fiſh to *ſwim*; yet ſome flie ſwifter, and higher then others, as their Wings are made: So ſome run nimbler then others, according as their Limbs are made; and ſome ſwim glider then others, according as their Fins are made. But *Man* ſurpaſſes the *ſhape* of all other *Creatures*; becauſe he hath a part, as it were, of every *ſhape*. But the ſame *motion*, and the ſame *matter* without the *ſhape*, could not give ſuch *External Properties*; ſince all *Internal Properties* are wrought out of *dull matter*. So as it is their *ſhapes*, joyned with ſuch *motions* proper thereunto, that giveth ſtrength, and Agileneſs. But the *Internal Qualities* may be alike in every *figure*; becauſe *Rational Spirits* work not upon *dull matter*, but *figures* themſelves.

Chap. 31. *The* Viſible Motion *in* Animals, Vegetables, *and* Minerals.

THe *external motions* of *Animals* are, running, turning, winding, tumbling, leaping, jumping, ſhoving, throwing, darting, climbing, creeping, drawing, heaving, lifting, carrying, holding, or ſtaying, piercing, digging, flying, ſwimming, diving. The *Internal motion*, is, contriving, directing, examining, comparing, or judging, contemplating, or reaſoning, approving or diſapproving, reſolving. From whence ariſe all the *Paſſions*, and ſeveral *Diſpoſitions*. Theſe, and the like, are the *viſible Internal motions* in *Animals*.

The *Internal motions* of *Vegetables*, and *Minerals*, are in operation; As, contracting, dilating; which is *Attractive*, *Retentive*, *Digeſtive*, *Expulſive*. The *Vegetables External motion*, is, increaſing, decreaſing, that is, enlarging, or laſting; although there may be *matter* not moving, yet there is no *matter*, which is not moved.

Chap. 32. *Of the* Working *of ſeveral* Motions *of* Nature.

MOtions do work according as they finde
Matter, that's fit, and proper for each kinde.
Senſitive Spirits work not all one way,
But as the *matter* is, they cut, carve, lay.
Joyning together *Matter*, *ſolid Light*,
And build and form ſome *figures* ſtreight upright;
Or make them bending, and ſo jutting out:
And *ſome* are large, and ſtrong, and big about.

And *ſome* are thick, and hard, and cloſe unite;
Others are flat, and low, and looſe, and light.
But when they meet with *matter*, fine, and thin,
Then they do weave, as *Spiders* when they ſpin:
All that is woven is ſoft, ſmooth, thin things,
As flowry *Vegetables*, and *Animal skins*.
Obſerve the *Grain* of every thing, you'l ſee,
Like inter-woven *Threads* lye evenly.
And like to *Diaper*, and *Damask* wrought,
In ſeveral works, that for our Table's bought.
Or like to Carpets which the *Perſian* made,
Or Sattin ſmooth, which is the *Florence* Trade.
Some *matter* they ingrave, like Ring, and Seal,
Which is the ſtamp of *Natures* Common-weal.
'Tis *Natures* Armes, where ſhe doth print
On all her Works, as *Coin* that's in the *Mint*.
Some ſeveral ſorts they joyn together glu'd.
As *matter ſolid*, with ſome that's *fluid*.
Like to the Earthly ball, where ſome are mixt
Of ſeveral ſorts, although not fixt.
For though the *Figure* of the Earth may laſt
Longer then others; yet at laſt may waſte.
And ſo the *Sun*, and *Moon*, and *Planets* all,
Like other *Figures*, at the laſt may fall.
The *Matter's* ſtill the ſame, but *motion* may
Alter it into *Figures* every way:
Yet keep the property, to make ſuch kinde
Of *Figures* fit, which *Motion* out can finde.
Thus may the *Fgures* change, if *Motion* hurls
That *Matter* of her wayes, for other Worlds.

Of the Minde.

Theſe degrees are viſible to us.

THere is a degree of ſtronger *Spirits* then the *ſenſitive Spirits*: as it were the *Eſſence* of *Spirits*; as the *Spirit* of *Spirits*, This is the *Minde*, or *Soul* of *Animals*. For as the *ſenſitive Spirits* are a weak *knowledg*, ſo this is a ſtronger *knowledge*. As to ſimilize them, I may ſay, there is as much difference betwixt them, as *Aqua Fortis*, to ordinary *Vitriol*. Theſe *Rational Spirits*, as I may call them, work not upon *dull matter*, as the *Senſitive Spirits* do; but onely move in meaſure, and number, which make *Figures*; which *Figures* are *Thoughts*, as *Memory*, *Underſtanding*, *Imaginations*, or *Fancy*, and *Remembrance* and *Will*.

Thus theſe *Spirits* moving in meaſure, caſting, and placing themſelves into *Figures* make a *Conſort*, and *Harmony* by Numbers.

Dancing is a meaſur'd Motion.

Where the greater Quantity, or Number, are together of thoſe *rational ſpirits*, the more variety of *Figure* is made by their

ſeveral

ſeveral *motions*, they dance ſeveral dances according to their Company.

Chap. 34. *Of their ſeveral* Dances, *or* Figures.

WHat *Object* ſoever is preſented unto them by the *ſenſes*, they ſtrait dance themſelves into that figure; this is *Memory*. And when they dance the ſame figure without the help of the outward *object*, this is *Remembrance*, when they dance the *figures* of their own invention, (as I may ſay) then that is imagination or *Fancie*. *Underſtanding* is, when they dance perfectly (as I may ſay) not to miſſe the leaſt part of thoſe *figures* that are brought through the ſenſes. *Will* is to chooſe a dance, that is to move as they pleaſe, and not as they are perſwaded by the *ſenſitive ſpirits*. But when their *motion* and *meaſures* be not regular, or their *quantity* or *numbers* ſufficient to make the *figures* perfect, then is the minde weak and infirme, (as I may ſay) they dance out of time and meaſure. But where the greateſt number of theſe, or *quantity* of theſe *Eſſences* are met, and joyn'd in the moſt regular *motion*, there is the cleareſt *underſtanding*, the deepeſt *Iudgement*, the perfecteſt *knowledge*, the fineſt *Fancies*, the more *Imagination*, the ſtronger *memory*, the obſtinateſt *will*.

But ſomtimes their motions may be *regular*; but ſociety is ſo ſmall, ſo as they cannot change into ſo many ſeveral *figures*: then we ſay he hath a weak minde, or a poor *ſoul*. But be their quantity or numbers few or great, yet if they move confuſedly, and out of order, we ſay the *minde* is diſtracted. And the reaſon the *minde*, or *ſoul* is improveable, or decayable, is, that the quantity or numbers are increaſeable, or decreaſeable, and their *motions* regular, and irregular.

A *Feaver* in the Body is the ſame *motion* among the *ſenſitive ſpirits*, as madneſſe is in the minde amongſt the rational *Spirits*. So likewiſe pain in the Body is like thoſe *motions*, that make grief in the *minde*. So pleaſure in the body is the like *motions*, as make delight, and joy in the *minde*, all Convulſive *motions* in the Body, are like the *motions* that cauſe Fear in the minde. All Expulſive motions amongſt the rational *ſpirits*, are a diſperſing their ſociety; As Expulſity in the Body, is the diſperſing of dull *matter* by the ſenſitive ſpirits.

All *Drugs* have an *Oppoſite motion* to the matter they work on, working by an *expulſive motion*; and if they move ſtrongly, having great quantity of ſpirits together in a little dull matter, they do not onely caſt out ſuperfluous *matter*, but pull down the very materials of a *figure*. But all *Cordials* have a *Sympathetical motion* to the *matter* they meet, giving ſtrength by their help to thoſe *ſpirits* they finde tired: (as one may ſay) that it is to be over-power'd by *oppoſite motions* in *dull Matter*.

Chap.

Chap. 35. *The* Sympathy, *and* Antipathy *of* Spirits.

PLeaſure, and *delight*, *diſcontent*, and *ſorrow*, which is Love, and hate, is like *light*, and *darkneſſe*; the one is a quick, equal, and free *motion*; the other is a ſlow, irregular, and obſtructed motion. When there is the like *motion* of *Rational* Spirits in *oppoſite figures*, then there is a like *underſtanding*, and *diſpoſition*. Juſt as when there is the like *Motion* in the *ſenſitive ſpirits*; then there is the like conſtitution of body. So when there is the like quantity laid in the ſame *Symmetry*, then the *figures* agree in the ſame proportions, and Lineaments of *Figures*.

The reaſon, that the *rational ſpirits* in one *Figure*, are delighted with the outward form of another *Figure*, is, that the *motions* of thoſe *ſenſitive Spirits*, which move in that *figure*, agree with the *motion* of the *rational ſpirits* in the other. This is love of beauty; And when the *ſenſitive motions* alter in the *figure* of the *body*, and the *beauty* decayes, then the motion of *rational ſpirits* alter, and the *love* of *godlineſſe* ceaſes. If the *motion* of the *rational ſpirits* are croſſe to the motion of the *ſenſitive ſpirits*, in oppoſite *figures*, then it is *diſlike*. So if the *motion* be juſt croſſe and contrary, of the *rational ſpirits* in *oppoſite figures*, it is *hate*; but if they agree, it is *love*.

But theſe *Sympathies*, which are made only by a likeneſſe of *motions* without an intermixture, laſt not long; becauſe thoſe *ſpirits* are at a diſtance, changing their *motion* without the knowledge, or conſent of either ſide. But the way that the *rational ſpirits* intermix, is, through the Organs of the body, eſpecially the *eyes*, and *Eares*, which are the common doors, which let the ſpirits out, and in. For the vocal, and verbal *motion* from the mouth, carry the *ſpirits* through the *eares* down to Heart, where *love* and *hate* is lodged. And the *ſpirits* from the *eyes* iſſue out in Beams, and Raies; as from the *Sun*, which heat, or ſcorch * the *heart*, which either raiſe a fruitful crop of *love*, making the ground fertile, or dries it ſo much, as makes it inſipid, that nothing of good will grow there, unleſſe ſtinking weeds of *Hate*; But if the ground be fertile, although every Crop is not ſo rich, as ſome, yet it never grows barren, unleſſe they take out the ſtrength with too much kindneſſe; As the old proverb, they kill with too much kindneſſe; which murther is ſeldom committed. But the rational ſpirits * are apt to take Surfet, as well as *ſenſitive ſpirits*, which makes love, and *Good-will*, ſo often to be ill rewarded, neglected, and diſdain'd.

* Scorching is, when the Motioh is too quick.

* That is, when there come ſo many ſpirits, as they diſagree, preſſing upon one another.

Chap. 36. *The* Sympathy *of* Senſitive, and Rational ſpirits *in one* Figure.

THere is a ſtrong *Sympathy*, and agreement, or Affection (as I may ſay) betwixt the rational ſpirits, and the *ſenſitive ſpirits* joyned in one figure: like Fellow-labourers that aſſiſt one

another, to help to finiſh their work. For when they diſagree, as the rational ſpirits will move one way ſometimes, and the *ſenſitive ſpirits* another; that is, when reaſon ſtrives to abate the appetite of the *Senſes*; yet it is by a loving direction, rather to admoniſh them by a gentle *contrary motion* for them to imitate, and follow in the like *motions*; yet it is, as they alwayes agree at laſt; Like the Father and the Son. For though the father rules by command, and the Son obeies through obedience, yet the father out of love to his ſon, as willing to pleaſe him, ſubmits to his delight, although it is againſt his liking; * So the *rational ſpirits* oftimes agree with the *motions* of the *ſenſitive ſpirits*, although they would move another way.

* Thoſe degrees that are neereſt, have the greateſt Sympathy

Chap. 37. *The* Sympathy *of the* Rational *and* Senſitive Spirits, *to the* Fgure *they make, and inhabit*.

ALL the *External motion* in a *Figure*, is, by the *ſenſitive ſpirits*; and all the internal, by the *rational ſpirits*: and and when the *rational* and *ſenſitive ſpirits*, diſagree in *oppoſite figures*, by, contrary *motion*, they oft war upon one another; which to defend, the *ſenſitive Spirits* and *rational ſpirits*, uſe all their force, and power in either *Figure*; to defend, or to aſſault, to ſuccour, or to deſtroy, through an averſion made by contrary motions in each other.

Now the *rational ſpirits* do not onely chooſe the *materials* for their defence, or aſſault, but do direct the *ſenſitive ſpirits* in the management thereof; and according to the ſtrength of the *ſpirits* of either ſide, the victory is gain'd, or loſt. If the *Body* be weak, there is like ſenſitive ſpirit, if the direction be not advantagious, there is leſſe *rational ſpirit*. But many times the Alacrity of the *rational* and *ſenſitive ſpirits*, made by moving in a *regular motion*, overcoms the greater *numbers*, being in a diſordered *motion*. Thus what is loſt by *Scarcity*, is regain'd by *Conformity* and *Unity*.

Chap. 38. Pleaſure, *and* Pain.

ALL *Evacuations* have an *expulſive motion*; If the *Expulſive motion* is *regular*, 'tis *Pleaſure*, if *irregular*, 'tis pain. Indeed, all Irregular and croſſe *motion*, is Pain; all *regular motion* is pleaſure, and *delight*, being *Harmony* of *Motion*, or a diſcord of *Motion*.

Chap. 39. *Of the* Minde.

IMagine the *rational Eſſence*, or *ſpirits*, like little *ſpherical obdies* of *Quick-ſilver* ſeveral ways * placing themſelves in ſeveral *figures*, ſometimes moving in meaſure, and in order: and ſometimes out of order this Quick-ſilver to be the *minde*, and their ſeveral poſtures made by *motion*, the paſſions and *affections*; or all that is moving in a

* Like Cheſſmen, Table-men, Nine-pins, or the like.

minde,

minde, to expreſſe thoſe ſeveral *motions*, is onely to be done by gueſſe, not by knowledge, as ſome few will I gueſſe at *Love* is, when they move in equal number, and even meaſure. *Hate* is an oppoſite motion: *Fear* is, when thoſe ſmall bodies tumble on a heap together without order. *Anger* is, when they move without meaſure, and in no uniform Figure. *Inconſtancy* is, when they move ſwiftly ſeveral wayes. *Conſtancy* is a circular motion, *doubt*, and *ſuſpicion*, and *jealouſie*, are when thoſe ſmall bodies move with the odd numbers. *Hope* is when thoſe ſmall bodies move like wilde-Geeſe, one after another. *Admiration* is, when thoſe Spherical bodies gather cloſe together, knitting ſo, as to make ſuch a circular figure; and one is to ſtand for a Center or point in the midſt. *Humility* is a creeping motion. *Joy* is a hopping, skipping motion. *Ambition* is a lofty motion, as to move upwards, or * higher then other motions. *Coveting*, or *Ambition* is like a flying motion, moving in ſeveral Figures like that which they covet for; if they covet for *Fame*, they put themſelves into ſuch Figures, as Letters do, that expreſſe words, which words are ſuch praiſes as they would have, or ſuch Figure as they would have Statues cut, or Pictures drawn: But all their motion which they make, is according to thoſe Figures with which they ſympathize and agree: beſides, their motion and figures are like the ſound of Muſick; though the notes differ, the cords agree to make a harmony: ſo ſeveral Symmetries make a perfect Figure, ſeveral figures make a juſt number, and ſeveral quantities or proportions make a juſt weight, and ſeveral Lines make an even meaſure: thus equal may be made out of Diviſions eternally, and infinitely. And becauſe the figures and motions of the infinite Spirits which they move and make are infinite, I cannot give a final deſcription: beſides, their motion is ſo ſubtle, curious, and intricate, as they are paſt finding out.

* I ſay higher for expreſſions ſake.

Some *Natural motions* worke ſo curious fine,
None can perceive, unleſſe an *Eie divine*.

Chap. 40. *Of* Thinking, *or the* Minde, *and* Thoughts.

ONE may think, and yet not of any particular thing; that is, one may have ſenſe, and not thoughts: For thoughts are when the minde takes a particular notice of ſome outward *Object*, or inward *Idea*; But *Thinking* is onely a *ſenſe* without any particular notice. As for example; Thoſe that are in a great fear, and are amazed, the *minde* is in confuſ'd ſenſe, without any particular *thoughts*: but when the minde is out of that amaze, it fixes it ſelf on *Particulars*, and then have *thoughts* of *paſt danger*; but the *minde* can have no particular *thought* of the *Amaze*; for the *minde* cannot call to minde that which was not.

Like

Likewiſe when we are aſleep, the *Minde* is not out of the *Body*, nor the *motion* that makes the ſenſe of the *minde* ceaſt, which is *Thinking*; but the motion that makes the thoughts therein work upon particulars. Thus the *minde* may be without *thoughts*, but *thoughts* cannot be without the *minde*: yet *thoughts* go out of the *minde* very oft, that is, ſuch a *motion* to ſuch a thing is ceaſt; and when that *motion* is made again, it returns. Thus *thinking* is the *minde*, and *thoughts* the *effect* thereof: *Thinking* is an equal *motion* without a figure, or, as when we feel *Heat*, and ſee no fire.

Chap. 41. *Of the* Motions *of the* Spirits.

IF it be, as probably it is, that all ſenſitive *ſpirits* live in dul *matter*; ſo *rational ſpirits* live in *ſenſitive ſpirits*, according to the ſhape of thoſe *Figures* that the *ſencitive ſpirits* form them.

The rational *ſpirits* by moving ſeveral ways, may make ſeveral kindes of knowledge, and according to the *motions* of the *ſenſitive ſpirits* in their ſeveral figures they make, though the *ſpirits* may be the ſame, yet their ſeveral *motions* may be unknown to each other. Like as a point, that writes upon a Table-book, which when the Letter that was writ thereon, is rub'd out, the Table is as plain, as if there were never any letter thereon; but though the letters are out, yet the Table-book, and in Pen remain. So although this *Motion* is gone, the *ſpirit*, and *matter* remain; But if thoſe *ſpirits* make other kindes of motions, like other kinds of *Letters*, or *Language*, thoſe *Motions* underſtand not the firſt, nor the firſt underſtands not them, being as ſeveral *Languages*. Even ſo it may be in a ſound; for that kinde of *knowledge* the *Figure* had in the *ſound*, which is an alteration of the *motion* of the *rational ſpirits*, cauſ'd by an alteration of the *motion* of the ſenſitive *ſpirits* in dull *matter*: And by theſe diſorderly *motions*, other *motions* are rub'd out of the Table-book, which is the *matter* that was moved. But if the ſame kinde of letters be writ in the ſame place again; that is, when the ſpirits move in the ſame *motion*, then the ſame *knowledg* is in that figure, as it was before; the other kinde of *knowledge*, which was made by other kinde of *motion*, is rub'd out, which ſeveral knowledge is no more known to each other, then ſeveral *Languages* by unlearned men. And as *Language* is ſtill *Language*, though not underſtood, ſo knowledge is ſtill knowledge, although not general; but if they be that we call dead, then thoſe letters that were rubbed out, were never writ again; which is, the ſame knowledge never returns into the ſame *figures*.

Thus the ſpirits of knowledge, or the *knowledge* of *ſpirits*, which is their ſeveral motions, may be ignorant and unacquainted with each other: that is, that ſome *motion* may not know how other *motions* move, not onely in ſeveral *ſpirits*, but in one and the ſame *ſpirit*; no more then in every Effect can know

their cauſe: and *motion* is but the effect of the Spirits, which *ſpirits* are a thin ſubtle *matter*: for there would be no motion if there were no matter; for nothing can move: but they may be *matter* without *Self-motion*; but not *ſelf-motion* without *matter*.

Matter prime knowes not what effects ſhall be,
Or how their ſeveral *motions* will agree.
Becauſe * tis *infinite*, and ſo doth move
Eternally, in which no thing can prove.
For *infinite* doth not in compaſſe lye,
Nor hath Eternal lines to meaſure by.
Knowledge is there none, to comprehend
That which hath no beginning, nor no end.
Perfect *knowledge* compriſes all can be,
But nothing can compriſe *Eternity*.
Deſtiny and *Fates*, or what the like we call,
In *infinites* they no power have at all.
Nature hath Generoſity enough to give
All *figures* eaſe, whilſt in that *Form* they live;
But motion which innated *matter* is,
By running croſſe, each ſeveral pains it gives.

*Nothing can be made or known abſolute out of Infinite and Eternal.

Chap. 42. *Of the Creation of the Animal* Figure.

THe reaſon, * that the ſenſitive *ſpirits*, when they begin to create an animal figure, the figure that is created feels it not, untill the model be finiſhed, that is, it cannot have an animal motion, until it hath an animal figure; for it is the ſhape which gives it local motion? and after the Fabrick is built, they begin to furniſh it with * ſtrength, and enlarge it with growth, and the *rational ſpirit* which inhabits it chooſeth his room, which is the *Head*; And although ſome *rational ſpirits* were from the firſt creating it, yet had not ſuch motions, as when created: beſides, at firſt they have not ſo much company, as to make ſo much change, as to take parts, like inſtruments of Muſick, which cannot make ſuch diviſion upon few ſtrings as upon more. The next, the figure being weak, their motions cannot be ſtrong; beſides, before the figure is inlarged by growth, they want room to move in. This is the reaſon, that new-born Animals ſeem to have no knowledge, eſpecially Man; becauſe the *ſpirits* do neither move ſo ſtrong, nor have ſuch variety of change, for want of company to make a conſort. Yet ſome animals have more knowledge then others, by reaſon of their ſtrength, as all beaſts know their dams, and run to their Dugs, and know how to ſuck as ſoon as they are born; and birds and children, and the like weak Creatures, ſuch do not.

But the *ſpirits* of ſenſe give them ſtrength, and the *ſpirits* of reaſon do direct them to their food, * and the ſpirits of ſenſe give

* Though it may have Motions, yet not the Animal Motion.

* The Figure might be without an Animal Motion, but an Animal motion cannot be untill there is an Animal Figure.

gave them Taſte, and appetite, and the *ſpirits* of reaſon chooſe their meat; for all Animal Creatures are not of one dyet, for that which will nouriſh one, will deſtroy another. * Which food is when ſuch Materials are not proper for ſuch a Figure.

Chap. 43. *The gathering of Spirits.*

IF the rational *ſpirits* ſhould enter into a *figure* newly created, altogether, and not by degrees, a Childe (for example) would have as much *underſtanding*, and *knowledge* in the *Womb*, or when it is new-born, as when it is inlarged and fully grown. But we finde by experience there are ſeveral ſorts and degrees of *knowledge* and *underſtanding*, by the recourſe of *ſpirits*: which is the reaſon, ſome *figures* have greater *proportion* of *underſtanding* and *knowledge*, and ſooner then others; yet it is increaſed by degrees, according as *rational ſpirits* increaſe. Like as children, they muſt get ſtrength before they can go. So *Learning* and *experience* increaſe *rational ſpirits*, as Food the *ſenſitive*: But experience and Learning is not alwayes tyed to the *eare*; for every *Organ* and *Pore* of the body is as ſeveral doors to let them in and out: For the *rational ſpirits* living with the *ſenſitive ſpirits*, come in, and go out with them, but not in equal *proportion*, but ſometimes more, ſometimes fewer: this makes *underſtanding* more perfect in *Health* then in *ſickneſſe*, and in our middle age, more then in the latter age: For in age and ſickneſſe there is more carried out, then brought in. This is the reaſon, Children have not ſuch underſtanding, but their reaſon increaſeth with their years. But the *rational ſpirits* may be ſimilized * to a company of Good-fellows, which have pointed a meeting; and the company coming from ſeveral places, makes their time the longer ere their numbers are compleated, though many a brain is diſappointed; but in ſome *figures* the rooms are not commodious to move in, made in their Creation, for want of help: thoſe are Changelings, Innocents, or Natural Fools.

* The greater the number is, the more variety of Motion is made, which makes Figures in the brain.

The *rational ſpirits* ſeem moſt to delight in *ſpungie ſoft* and *liquid matter*; as in the *Blood*, *Brain*, *Nerves*, and in *Vegetables*; as not onely being neereſt to their own nature, but having more room to move in. This makes the *rational ſpirits* to chooſe the *Head* in *Animals*, for their chief room to dance their *Figures* in: * for the Head is the biggeſt place that hath the ſpungy *Materials*; thus as ſoon as a *figure* is created, thoſe rational Spirits chooſe a Room.

* in Animal Shapes

Chap. 44. *The moving of* Innate matter.

THough *Motion* makes *knowledge*, yet the ſpirits give *motion*: for thoſe Spirits, or *Eſſences*, are the Guiders, Governours, Directers; the Motions are but their Inſtruments, the *Spirits*

are the Cauſe, *motion* but an Effect therefrom: For that thin *matter* which is *ſpirits*, can alter the *motion*, but *motion* cannot alter the *matter*, or *nature* of thoſe *Eſſences*, or ſpirits; ſo as the ſame ſpirits may be in a body, but not one and the ſame *knowledge*, becauſe not the ſame *motion*, that made that *knowledge*. As for example; how many ſeveral *Touches* belong to the body? for every part of the *body* hath a ſeveral *touch*, which is a ſeveral *knowledge* belonging to every ſeveral part; for every ſeveral part doth not know, and feel every ſeveral *touch*. For when the head akes, the *heel* feels it not, but onely the *Rational ſpirits* which are free from the incumbrance of *dull matter*, they are *agile*, and *quick* to take notice of every particular *touch*, in, or on every part of the *figure*. The like *motions* of a pain in the *Body*. The like motions of the *Rational ſpirits*, we call *grief* in the minde; and to prove it is the like *motion* of the Rational Spirits to the *ſenſitive*, which makes the *knowledge* of it, is, when the *rational Spirits* are buſily moved with ſome Fantaſmes; if any thing touches the *body*, it is not known to the *rational ſpirits*, becauſe the *rational ſpirits* move not in ſuch *motion*, as to make *a thought* in the *head*, of the *touch* in the heel, which makes the *thoughts* to be as ſenſeleſſe of that touch, as any other part of the *body*, that hath not ſuch paines made by ſuch *motions*. And ſhall we ſay, there is no ſenſe in the *heel*, becauſe no knowledge of it in the head? we may as well ſay, that when an *Object* ſtands juſt before an *eye* that is blinde, either by a contrary *motion* of the *thoughts* inward, by ſome deep Contemplation, or otherwiſe: we may as well ſay there is no outward object, becauſe the rational *ſpirits* take no notice of that *Object*; tis not, that the ſtronger *motion* ſtops the leſſe, or the ſwifter, the ſlower; for then the *motions* of the *Planets* wold ſtop one anothers courſe.

Some will ſay, what *ſenſe* hath man, or any other *Animal* when they are dead? it may be anſwered, that the *Figure*, which is a *body*, may have *ſenſe*, but not the *Animal*; for that we call *Animal*, is ſuch a temper'd *matter*, joyn'd in ſuch a *figure*, moving with ſuch kinde of *motions*; but when thoſe *motions* do generally alter, that are proper to an *Animal*, although the *matter*, and Figure remain, yet it is no longer an *Animal*, becauſe thoſe motions that help it to make an *Animal* are ceas'd So as the Animal can have no more knowledge of what kind of ſenſe the Figure hath (becauſe it is no more an *Animal*) then an Animal, what ſenſe duſt hath. And that there is the reaſon, that when any part is dead in an Animal, if that thoſe motions that belonged to the Animal, are ceas'd in that part, which alter it from being a part of the Animal, and knowes no more what ſenſe it hath, then if a living man ſhould carry a dead man upon his ſhoulders, what ſenſe the dead man feels, whether any, or no.

Chap.

Chap. 45. *Of* Matter, Motion, *and* Knowledge, *or* Underſtanding.

WHatſoever hath an *innate motion*, *hath knowledge*; and what matter ſoever hath this *innate motion*, is *knowing*, : but according to the ſeveral motions, are ſeveral knowledges made; for *knowledge* lives in *motion*, as motion lives in *matter* : for though the kind of *matter* never alters, yet the manner of *motions* alters in that *matter* : and as *motions* alter, ſo *knowledge* differs, which makes the ſeveral *motions* in ſeveral *figures* to give ſeveral knowledge. And where there is a likeneſſe of *motion*, there is a likeneſſe of *knowledge* : As the *Appetite* of *Senſitive ſpirits*, and the deſire of *rational ſpirits* are alike motions in ſeveral degrees of matter. And the *touch* in the heel, or any part of the body elſe, is the like *motion*, as the *thought* thereof in the head; the one is the *motion* of the *ſenſitive* ſpirits, the other in the rational *ſpirits*, as *touch* from the ſenſitive ſpirits, for thought is onely a ſtrong *touch*, and *touch* a weak *thought*. So ſenſe is a weak knowledge, and *knowledge* a ſtrong *ſenſe*, made by the degrees of the ſpirits : for *Animal ſpirits* are ſtronger (as I ſaid before) being of an higher extract (as I may ſay) in the Chymiſtry of Nature, which makes the different degrees in knowledge, by the difference in ſtrengths and fineneſſe, or ſubtlety of *matter*.

Chap. 46. *Of the* Animal Figure.

WHatſoever hath *motion* hath *ſenſitive ſpirits*; and what is there on earth that is not wrought, or made into *figures*, and then undone again by theſe *ſpirits* ? ſo that all *matter* is moving, or moved by the movers; if ſo, all things have *ſenſe*, becauſe all things have of theſe ſpirits in them; and if *Senſitive ſpirits*, why not *rational ſpirits* ? For there is as much infinite of every ſeveral degree of matter, as if there were but one *matter* : for there is no *quantity* in *infinite*; *for infinite* is a continued thing. If ſo, who knows, but *Vegetables* and *Minerals* may have ſome of thoſe *rational ſpirits*, which is a *minde* or *ſoul* in in them, as well as *man* ? Onely they want that *Figure* (with ſuch kinde of motion proper thereunto) to expreſſe *knowledge* that way. For had *Vegetables* and *Minerals* the ſame ſhape, made by ſuch *motions*, as the ſenſitive ſpirits create; then there might be wooden *men*, and *iron beaſts*; for though marks do not come in the ſame way, yet the ſame *marks* may come in, and be made by the ſame *motion*; for the ſpirits are ſo ſubtle, as they can paſs and repaſs through the ſolideſt matter. Thus there may be as many ſeveral and various motions in *Vegetables* and *Minerals*, as in *Animals*; and as many internal *figures* made by the *rational ſpirits*; onely they want the *Animal*, to expreſſe it the

Animal

Animal way. And if their knowledge be not the ſame knowledge, but different from the *knowledge* of *Animals*, by reaſon of their different *figures*, made by other kinde of *motion* on other tempered matter, yet it is *knowledge*. For ſhall we ſay, A *man* doth not know, becauſe he doth not know what another man knows, or ſome higher power?

Chap. 47. *What an* Animal *is.*

AN *Animal* is that which we call *ſenſitive ſpirit*; that is, a *figure* that hath *local motion*; that is, ſuch a kinde of *figure* with ſuch kinde of *motions* proper thereunto. But when there is a general *alteration* of thoſe *motions* in it, then it is no more that we call *Animal*; becauſe the *local motion* is altered; yet we cannot knowingly ſay, it is not a *ſenſitive Creature*, ſo long as the *figure* laſts: beſides, when the *figure* is diſſolved, yet every ſcattered part may have *ſenſe*, as long as any kinde of *motion* is in it; and whatſoever hath an *innate motion*, hath ſenſe, either increaſing or decreaſing *motion*; but the *ſenſe* is as different as the *motions* therein, becauſe thoſe properties belonging to ſuch a *figure* are altered by other *motions*.

Chap. 48. *Of the* diſperſing *of the* Rational Spirits.

SOme think, that the *Rational ſpirits* flye out of *Animals*, (or that *Animal* we call Man) like a ſwarm of *Bees*, when they like not their hives, finding ſome inconvenience, ſeek about for another habitation, or leave the body, like *Rats*, when they find the houſe rotten, and ready to fall; Or ſcar'd away like *Birds* from their Neſt. But where ſhould this Swarm, or Troop, or Flight, or Eſſences go, unleſſe they think this *thin matter* is an *Eſſence*, evaporates to nothing?

As I have ſaid before, the difference of *rational ſpirits*, and *ſenſitive ſpirits*, is, that the *ſenſitive ſpirits* make *figures* out of dull *matter*: The *rational ſpirits* put themſelves into *figure*, placing themſelves with number, and meaſure; this is the reaſon when *Animals* die, the *External Form* of that *Animal* may be perfect, and the *Internal motion* of the *ſpirits* quite alter'd; yet not abſent, not diſpers'd untill the *Annihilating* of the *External Figure*: thus it is not the *matter* that alters, but the *Motion* and *Form*.

Some *Figures* are ſtronger built then others, which makes them laſt longer: for ſome, their building is ſo weak, as they fall as ſoon as finiſhed; like houſes that are built with ſtone, or Timber, although it might be a ſtone-houſe, or timber-houſe, yet it may be built, not of ſuch a ſort of Stone, or ſuch a ſort of Timber.

Chap.

Chap. 49. *Of the* Senſes.

THe *Pores* of the skin receive *touch*, as the *eye* light, the *eare* ſound, the *noſe* ſcent, the *tongue* taſt. Thus the ſpirits paſſe, and repaſſe by the holes, they peirce through the *dull matter*, carrying their ſeveral burthens out, and in, yet it is neither the Burthen, nor the Paſſage that makes the different *ſenſe*, but the different *motion*; (*) for if the *motion* that comes through the *Pores* of the *Skin*, were as the *motions* which come from the *Eye*, *Ear*, *Noſe*, *Mouth*, then the body might receive *ſound*, *light*, *ſcent*, *Taſt*, all other as it doth *touch*.

* To prove that it is the ſeveral Motion, is that we ſhall have the ſame ſenſe in our ſleep, either to move pleaſure or feel pain.

Chap. 50. *Of* Motion *that makes* Light.

IF the ſame *motion* that is made in the *Head* did move the *Heel*, there would appear a Light to the *Senſe* of that part of the *figure*; unleſſe they will make ſuch *matter* as the *Brain* to be *infinite*, and onely in the head of an *Animal*.

Chap. 51. Opticks.

THere may be ſuch *motion* in the *Brain*, as to make Light, although the *Sun* never came there to give the firſt *motion*: for two *oppoſite motions* may give a light by *Reflection*, unleſſe the *Sun*, and the *Eye* have a particular *Motion* from all *Eternity*: As we ſay an *Eternal Monopolor* of ſuch a kinde of *Motion* as makes *Light*.

Chap. 52. *Of* Motion, and Matter.

WHY may not *Vegetables* have *Light*, *Sound*, *Taſte*, *Touch*, as well as *Animals*, if the ſame *kinde* of *motion* moves the ſame kinde of *matter* in them? For who *knows*, but the *Sap* in *Vegetables* may be of the ſame *ſubſtance*, and *degree* of the *Brain*: And why may not all the *ſenſes* be *inherent* in a *figure*, if the ſame *Motion* moves the ſame *matter* within the *figure*, as ſuch *motion* without the *figure*?

Chap. 53. *Of the* Brain.

THe *Brain* in *Animals* is like Clouds, which are ſometimes ſwell'd full with *Vapour*, and ſometimes *rariſied* with *Heat*, and mov'd by the *ſenſitive ſpirits* to ſeveral *Objects*, as the *clouds* are mov'd by the *Wind* to ſeveral places.

The *winds* ſeem to be all *Spirits*, becauſe they are ſo *agile*, and *quick*.

Chap.

Chap. 54. *Of Darkneſſe.*

TO prove that *Darkneſſe* hath *particular motions* which make it, as well as *motion* makes light, is that when ſome have uſed to have a light by them while they ſleep, will, as ſoon as the light goeth out, awake; for if *Darkneſſe* had no *motion*, it would not ſtrike upon the *Opick Nerve*. But as an equal *motion makes light*, and a *perturb'd motion makes colour*, which is between *Light* and *darkneſſe*: So *darkneſſe* is an *Oppoſite Motion* to thoſe *motions* that *make light*; for though *light* is an equal *motion*, yet it is ſuch a *kinde*, or ſort of *Motion*.

Chap. 55. *Of the* Sun.

WHY may not the *Sun* be of an higher *Extract* then the *rational ſpirits*, and be like *Glaſſe*, which is a high *Extract* in *Chymiſtry*, and ſo become a (*) *ſhining body*? If ſo ſure it hath a great knowledge; for the *Sun* ſeems to be compoſed of *pure* ſpirits, without the mixture of dull *matter*; for the *Motion* is quick, and *ſubtle*, as we may finde by the effect of the light, and *heat*.

* Like glaſſe.

Chap. 56. *Of the* Clouds.

THe *Clouds* ſeem to be of ſuch *ſpungy*, and *porous Matter*, as the *Rain*, and *Aire*, like the *ſenſitive ſpirits* that form, and move it, and the *Sun* the *Rational Spirit* to give them *knowledge*; And as *moiſt Vapours* from the *Stomack* riſe, and gathering in the *Brain*, flow through the eyes: ſo do the *Clouds* ſend forth, as from the *Brain*, the *Vapours* which do riſe in *ſhowres*.

Chap. 57. *Of the* Motion *of the* Planets.

THE *Earth*, *Sun*, *Moon*, the reſt of *Planets* all
Are mov'd by that, we *Vital Spirits* cal.
And like to *Animals*, ſome move more ſlow,
And other ſome by *quicker motion* go.
And as ſome *Creatures* by their *ſhapes* do flye,
Some *ſwim*, ſome *run*, ſome *creep*, ſome *riſeth high*
So *Planets* by their *ſhapes* about do winde,
All being made, like *Circles*, round we finde.

Chap. 58. *The* Motion *of the* Sea.

THe *Sea's* more quick, then freſher waters are,
The reaſon is, more *Vital ſpirits* are there.

And

And as the *Planets* move ſtill round about,
So *Seas* do ebb and flow both in and out.
As Arrows flye up, far as ſtrength them lend,
And then for want of ſtrength do back deſcend:
So do the Seas in *ebbes* run back again,
For want of ſtrength, their length for to maintain
But when they ebb, and flow, at certain times,
Is like the *Lungs* that draw, and breath out wind.
Juſt ſo do *Seas* draw back and then do flow,
As conſtant as the *Lungs* do to and fro:
Alwayes in motion, never lying ſtill,
The empty place they leave, turn back to fill.

We may as well inquire of *Nature*, *why Animals* breath in ſuch a ſpace of *Time*, as the *Seas* ebb and flow in ſuch a ſpace of *Time*.

AN

EPISTLE

TO

CONDEMNING READERS.

MAny perchance will laugh in ſcorn at my opinion, and ask what reaſon I have to think thoſe things I have deſcribed ſhould be made with ſuch a kinde of Motion, my anſwer is, that I gueſs by the forms, I mean the figures, or ſhapes, what the motion may be to produce them; for I ſee the figure of a four leg'd Creature hath other motions then two legged Creatures, or then thoſe Creatures that have no legs; and I ſee ſome ſhape Creatures that can flee, by reaſon of their figures, which is made proper to produce that kinde of motion; for thoſe that are not made ſo, cannot do ſo. By this I think it probable that Internal motions, are after the manner of External motions; for we may gueſs at the cauſe by the effects, ſo by the figures of Snow, Froſt, Hail, Rain, Vapor, and the like, we may gueſſe at other Internal, or external motions, that produced their External figures, or alterations, and by the effects of light, darkneſſe, heat, cold, moiſture, what manner of motions produced them; wherefore I know no reaſon why any ſhould condemn my opinions. But the cuſtom of their breeding in the Schools of *Ariſtotle*, and

Socrates

Socrates, and the reſt of ancient Authors, or elſe they conſider not my opinions enough; for if they did, they might ſee as much probability for mine, as any of their opinions; For though in natural Philoſophy there may be many touches found out by experiences, and experiments, yet the Study is onely conjecturally, and built upon probabilities, and until probabilities be condemned by abſolute and known truth, let them have a place amongſt the reſt of probabilities, and be not ſo partial to contradict, as to be unjuſt to me, take not away the right of my place becauſe young; for though age ought to have reſpect, yet not ſo as to do youth wrong, but I hope my new born opinions will be nouriſhed in Noble and learned Schools, and bredup with induſtrious Students; but howſoever, I delight my ſelf, for next to the finding out of truthes, the greateſt pleaſure in Study, is, to finde out probabilities. I make no queſtion but after Ages will eſteem this work of mine, but what ſoever is new, is not received at the firſt with that good acceptation, by reaſon it is utterly unknown unto them, and a newneſſe, and an unacquaintedneſſe makes the ignorance, but when time hath made acquaintance, and a right underſtanding, and a right underſtanding will make a friendſhip betwixt Fame and my *Book*.

OF FORTUNE.

PART II.

CHAP. 59.

MAtter, Figure, and Motions, are the gods that Create fortune; For fortune is nothing in it ſelf but various motions gathered, or drawn to a point, which point man onely thinks it fixt upon him, but he is deceived, for it fixes upon all other things; for if any thing comes, and rubs off the bark of a tree, or breaks the tree, it is a miſs-fortune to that tree, and if a houſe be built in ſuch a place, as to ſhelter a tree from great ſtorms, or cold weather, it were good fortune to that tree, and if a beaſt be hurt it is a miſs-fortune to that beaſt, or bird, and when a beaſt, or bird, is brought up for pleaſure, or delight, and not to work or be impriſoned, it is a good fortune to that beaſt, or bird; but as I ſaid before fortune is onely various motions, drawn to a point, and that point that comes from croſſe motions, we call bad fortune, and thoſe that come from Sympathetical motions we call good fortune, and there muſt needs be Antipathetical Motions as well as Sympathetical Motions, ſince Motions are ſo various.

But man, and for all that I know, all other things, are governed by outward Objects, they rule, and we obey; for we do not rule and they Obey, but every thing is led like dogs in a ſtring, by a ſtronger power, * but the outward power being inviſible, makes us think, we ſet the rules, and not the outward Cauſes, ſo that we are governed by that which is without us, not that which is within us; for man hath no power over himſelf.

* Natural power.

Chap. 60. *Of time and Nature.*

NO queſtion but there is a time in Nature, for time is the Variation of Nature, and nature is a producing Motion

tion, a multiplying figure, an endleſſe meaſure, a quantileſſe ſubſtance, an indefailable matter.

Chap. 61. *Of Matter, Motion, and Figure.*

AS I ſaid before in my firſt part of my Book, that there is no firſt Matter, nor no firſt Motion, becauſe Eternal, and Infinite, yet there could be no Motion, without matter; for Matter is the cauſe, Motion but the effect of Matter, for there could be no motion unleſſe there were Matter to be moved; But there might be Matter, and Figure, without Motion, as an infinite, and eternal dull lump; For I ſee no reaſon, but infinite might be without running forward, or circle-wayes, if there were not ſeveral degrees of the onely Matter, wherein Motion is an Infinite Eternal effect of ſuch a degree. Neither is it nonſenſe to ſay, Figure is the effect of Matter; for though there is no Matter without Figure, yet there could be no figure without Matter, wherefore Matter is the prime cauſe of Figure, yet there could be no figure without matter, wherefore matter is the prime cauſe of figure, but not figure of matter, for figure doth not make matter, but matter figure, no more then the creature can make the Creator; but a creature may make a figure. Thus although there is no firſt matter, yet matter is the firſt cauſe of motion and figure, and all effects.

Although they are as infinite and Eternal, as matter it ſelf, and when I ſay Matter *prime*, I ſpeak for diſtinction ſake, which is the onely Matter.

The innated Matter, is the ſoul of Nature.

The dull part of Matter, the Body.

And the infinite figures, are the infinite form of Nature.

And the ſeveral motions are the ſeveral actions of nature.

Chap. 62. *Of Cauſes, and effects.*

AS I have ſaid before the effects are infinite, and eternal as the Cauſes, becauſe all effects lie in matter and motion, indeed in matter onely; for motion is but the effect of matter.

Wherefore all particular figures although diſſiolvable yet is inherent in the matter, and motion, as for example, if a man can draw the picture of a man, or any thing elſe, although he never draws it, yet the Art is inherent in the man, and the picture in the Art as long as the man lives, ſo as long as there is matter, and motion, which was from all Eternity, and ſhall be eternally; the effect will be ſo.

Chap. 63. *Whether motion is a thing, or nothing, or can be Annihilated*

SOme have opinion that Motion is nothing, but to my reaſon it is a thing; for if matter, is a ſubſtance, a ſubſtance is a thing, and the motion, and matter being unſeparablely, united, makes it but one thing.

For as there could be no motion without ſuch a degree, or extract of matter ſo there could be no ſuch degree or extract of matter without motion, thus motion is a thing. But by reaſon particular motions leave moving in ſuch matters and figures, ſhall we ſay they are deceaſed, dead, or become nothing; but ſay ſome, motions are accidents, and accidents are nothing; but I ſay, all acccidents live in ſubſtance, as all effects in the cauſes, ſay ſome, when a man for example ſhakes his hand, and when he leaves ſhaking, whether is that motion gone (ſay others) no where, for that particular motion ceaſeth to be, ſay they.

I ſay extract. becauſe it is the eſſence of matter.

I anſwer, that my reaſon tells me, it is neither fled away, nor ceaſed to be, for it remains in the hand, and in that matter that created the hand, that is in that, and the like innated matter that is in the hand. But ſome will ſay, the hand never moves ſo again, but I ſay the motion is never the leſſe there, they may as well ſay, when they have ſeen a Cheſt full of Gold, or the like, and when their eyes are ſhut, or that they never ſee it more, that the Gold doth not lie in the Cheſt, although the Gold may lie there eternally, or if they ſhould ſee it again, ſay it is not the ſame Gold. So likewiſe particular motions are, but ſhewed, not loſt, or Annihilated: or ſay one ſhould handle a veſſel often, that every time you handle the veſſel, it is not the ſame touch, veſſel, or hand, and if you never touch the veſſel again, that the hand, veſſel, or touch is annihilated.

But particular motion, as the veſſels, or hand is but uſed, not annihilated, for particular motions can be no more annihilated, then particular figures that are diſſolved and how, in reaſon can we ſay in reaſon particular figures are Annihilated, when every part and parcel, grain, and atome, remains in infinite matter, but ſome will ſay, when a houſe: for example, is pull'd down, by taking aſunder the materials, that very figure of that houſe is annihilated; but my opinion is, that it is not, for that very figure of that houſe remains in thoſe materials, and ſhal do eternally alt hough thoſe materials were diſſolved into Atoms, and every Atome in a ſeveral place, part, or figure & though infinite figures ſhould be made by thoſe materials by ſeveral diſſolutions and Creations, yet thoſe infinites would remain in thoſe particular materials eternally, and was there from all eternity; And if any of thoſe figures

be

be rebuilt, or Created again, it is the ſame figure it was.

So likewiſe the motion of the hand which I ſaid for example, if the ſame hand moves after the ſame manner, it is the ſame motion that moved the hand before; ſo it may make infinite repetitions; thus one and the ſame motion may move eternally, and reſt from moving, and yet have a being.

Chap. 64. *Of Motions.*

THere are millions of ſeveral motions which agree to the making of each figure, and millions of ſeveral motions are knit together; for the general motion of that are figure, as if every figure had a Common-Weale of ſeveral Motions working to the ſubſiſtence of the figure, and ſeveral ſorts of motions, like ſeveral ſorts of Trades hold up each other; ſome as Magiſtrates, and rulers; others as Train-bands, as ſouldiers; ſome make forts, and dig trenches; ſome as Merchants that traffick; ſome as Sea-men, and Ship-maſters; ſome that labour and and work, as ſome cut and carve; Others paint, and ingrave; ſome mix, and temper, joyn, and inlay, and glue together; ſome form, and build; ſome caſt in moulds, and ſome makes moulds to caſt; ſome work rough-caſts; ſome polliſh and refine; ſome bear burthens, ſome take off burthens, ſome digg, ſome ſowe, ſome plough, ſome ſet, ſome graft, ſome plant, ſome gather, ſome reap, ſome ſift, ſome thraſh, ſome grind, ſome knead, ſome bake, ſome beat, ſome ſpin, ſome weave, ſome ſewe together, ſome wind and twiſt, ſome create, and others diſſolve, and millions of millions of motions, but as we ſee external, ſo we may imagine are internal motions.

Chap. 65. *Many motions go to the producing of one thing, or to one end.*

FOr there are millions of ſeveral motions go to the making of one figure, or in mixing, as I may ſay, of ſeveral degrees of the dull part of matter, as I will give one for example in groſſe external motions, where I will deſcribe it by digeſtive motions, which is to fit parts, and to diſtribute parts to ſeveral places proper to the work. For digeſtive motions, there are many ſeveral ſorts, or kinds of motions mixt together, as for example, a piece of meat is to be boyled, or the like, ſome motions cut fuel, and others take it up, others carrie, other lay down in a Chimnie, or the like place, others put fire, others kindle it, and make it burn, others take mettle and melt it, others caſt ſuch a figure as a pot, others bring the pot, others ſet it over the fire, others take up water, others carry that water to the pot, others put that water into the pot, others kill a ſheep, others divide it into parts,

others

others put it a part into the pot. Thus a piece of meat cannot be boyled without all theſe motions, and many more, which would be too tedious to relate; for I could have inlarged it three times as many more, only to boyl a piece of meat, and if there be ſo many ſeveral motions in our groſſe ſenſe in ſuch things as theſe, then what is there in infinite Nature, yet for all theſe infinite varieties of motions, as I ſaid before, I cannot perceive but ſix ground-motions, or fundamental motions, from whence all changes come, which are theſe attractive motions, contracting motions, retentive motions, dilative motions digeſtive motions, and expulſive motions; likewiſe, although there be infinite kindes, and different figures, yet the ground-work, from whence ariſeth all the veriety, is but from four figures; as Circular, Triangular, Cupe, and Paralels. And as there are infinite changes of motions, amongſt the ſenſitive innated matter, working on the dull parts of matter, ſo there are infinite changes of motions in the rational innated matter, making infinite kinds of knowledge, and degrees of knowledge, and underſtanding, and as there are infinite changes of motion, ſo there are infinite effects, and every produced effect, is a producing effect, and effects which effect produce effects, and the onely matter is the cauſe of all effects, for the ſeveral degrees of onely matter, is the effect of onely matter, and motion is the effect of ſome ſorts of the degrees of onely matter, and varieties are the the effects of matter and motion, and life is the effect of innate matter; and knowledge the effect of life.

Chap. *66. Of the ſix principal motions.*

AS I have ſaid, there are infinite Contractions, Atractions, Retentions, Dilations, digeſtions, and expulſions, and to explain my ſelf to my readers as well as I can, unleſſe they ſhould miſtake me, I will here deſcribe, although after a groſſe way; yet according to my capacity. A few of the infinite variety of motions, firſt there are five, or ſix principal motions, from whence infinite changes are made, or produced, as from Contractions, Attractions, Retentions; theſe three principal motions do in ſome kinde ſimpathize to each other; and dilations, and expulſions do alſo ſympathize to each other, but digeſtions is a mixt motion taking part of all, but I divide them into ſix parts, for diſtinction; Now to treat of them ſeverally, we muſt make an imaginary Circumference, and Center.

Then firſt for Attracting motions, which is to draw towards the Center, that is, to draw to a leſſe compaſſe, as to draw towards a point, yet Atractions draw not alwayes after one and the ſame manner, for ſome motions draw after them, as horſes do Coaches, Carts, ſleds and the like, but after ſe- This for example.

veral fashions, forms, and biasses and several motions, in those motions some slow, some quick, some crosse, some even. Again, some times Attractive motions draw, as if one should pull in a line, or draw in a net, some slope-wayes, some straight wayes; some square wayes, some round wayes; and millions of the like varieties, in this sort of motion, yet all Attracting motion.

Secondly, Contracting motions which move after another manner; for though both these sorts of motions, are to bring towards a point, yet Contraction me thinks, strives more against *Vacuum*, then Attraction, gathering all into a firm body, stopping up all porous passages, shutting out space, and gathering in matter, as close as it can; indeed Attractions are but in the way to Contractions, as Dilations to expulsions; but this sort of motions is, surfling, pleating, folding, binding, knitting, twisting, griping, pressing, tying, and many the like, and after several manners, or fashions.

Thirdly, Retention is to hold, or to stay from wandring, to fix, as I may say, the matter to one place; as if one should stick, or glue parts together.

Fourthly, Dilations are to inlarge, as to spend, or extend, striving for space, or compasse; it is an incroaching motion, which will extend its bounds as far as it can, this sort of motion is melting, flowing, streaming, spreading, smoothing, stretching, and millions of the like.

Fiftly, Expulsive, is a motion that shuns all unity, it strives against solidity, and uniformity, it disperses every thing it hath power on; this sort of motion, is, breaking, dissolving, throwing about.

Sixthly, Digestive motions, are the creating motions, carrying about parts to parts, and fitting, and matchings and joyning parts together, mixing and tempering the matter for proper uses.

Chap. 67. *Of Exterior Motions produced from the six principle Motions.*

Drawing motions.

I Will here repeat some of the varieties of grosse exterior motions, such as are visible to our grosser senses, to cleer my readers imaginary motion; Some motions draw, as horses draw Coaches, Carts, Sleds, Harrows, or the like; others, as horses, and dogs, are led in a bridle, or string.

Some, as beasts draw their prey to the Den moving backwards.

Some draw up lines shorter, and thicker, and some draw in circular lines, sloping lines, and square lines.

Other sorts of drawing, some straight lines; some square lines, round lines, slope lines, some motions draw up; some draw down, some draw side-wayes; some crosse, some regular;

other

Other motions do, as if one ſhould drive, or ſhove a ſolid ſubſtance before them, the varieties of theſe motions. Driving motions.

Some are, as if a man ſhould drive a wheel-barrow, or rowling of barrels, or driving a plough, or a rowler, and millions the like.

Others are, as if beaſts and men were to carry burthens, ſome bearing burthens on their back; ſome on their head; ſome in in their mouth; ſome in their arms; ſome in their hands; ſome under their armes; ſome on their thighs; ſome on their ſtings, as Bees do, and millions the like, and every one of thoſe burthens, have ſeveral motions thereto, and yet all but bearing motions. Bearing motions.

Other ſorts of motions, as throwing the bar, pitching the bar, throwing a ball, ſtriking a ball, throwing a bowl, flinging a dart, darting a dart, throwing upward, downward, ſtraight-out, ſide-wayes, and all theſe ſeveral manners, is but a throwing motion. Throwing, ſtriking, darting motions.

Leaping, running, hopping, trotting, gallopping, climing, clamering, flying, and infinite others, yet all is but a lofty motion. Lofty motions.

Diving, dipping, mowing, reaping, or ſhearing, rowling, creeping, crawling, tumbling, traveling, running, and infinite the like examples may be given of the varieties of one and the ſame kinde of motion. Low motions

Chap. 68. *Of double motions at one and the ſame time, on the ſame matter.*

AS for example; ſpinning flax, or the like is drawn long, and ſmall, twiſted hard, and round, and at one time.

Again, a bowl runs round-way, and yet ſtraight-out at one time.

A ſhuttle-cock ſpins about in a ſtraight line.

The winde ſpreads, and yet blows ſtraight-out at one and the ſame time.

Flame aſcends Circular, and many the like examples may be given.

Chap. 69. *Of the ſeveral ſtrengths.*

ALthough there be infinite ſtrengths of Motion, yet not to all ſorts of figures, nor to all degrees of matter; for ſome figures move ſlow, others move ſwift, according to the Nature of the ſhape, or the interior ſtrengths, or the degree, or quantity of innated matter; that created them; for though every degree of innated matter, is of one and the ſame ſtrength, yet there are different degrees; but onely two degrees are

ſubject to our weak ſenſe, as the innate minde, and the innated body, which we call ſenſe and reaſon, which ſenſe and reaſon, may be in every thing, though after different manners, but we have confined ſenſe, onely to animal kinde, and reaſon onely to mankinde; but if the innated matter is in the dull parts of matter, as the life of the body, then there is no part that hath not ſenſe and reaſon whether creating or created, diſſolving, or diſſolved, though I will not ſay that every creature enjoys life alike, ſo every figure is not innated alike, for ſome is weaker innated, and ſome ſtronger, either by quantity or degree, yet every figure is innated; for it is innated matter that creates, and diſſolves figures, yet the innated matter works according to the ſeveral degrees, and tempers, of the dull part of matter, and to ſuch properties, and figures, and figures properties, and proper figures, that is, motion doth form the onely matter, into figures, yet motion cannot alter the Entity of only matter, but motion can, and doth alter the interior, and exterior figures, and though the ſeveral degrees of matter may be placed, and replaced in figures, yet the nature of the matter cannot be altered.

Chap. 70. *The creations of Figures, and difference of Motions.*

THoſe motions that are proper to create figures, are different from thoſe motions that diſſolve them, ſo that ſympathetical internal motions, do not onely aſſiſt one another, but Sympathetical external Motions, and Sympathetical figures; this is the reaſon that from two figures, a third, or more is created, by the way of procreation; yet all figures are created, after one and the ſame kinde of way; yet not after one and the ſame manner of way, as Vegetables, Minerals, and ſome ſorts of Animals, as ſuch as are bred from that we call corruption, as ſome ſorts of worms, and ſome ſorts of flies, and the like; Yet are they created by the procreation of the heat, and moiſture, the ſame way are plants that grow wilde produced, but thoſe that are ſown or ſet, although they are after one and the ſame kinde of way, yet not after the ſame manner; for the young vegetables, were produced from the ſeeds, and the earth, which were ſowed, or ſet together, and in grafts is when two different plants produce ſeed of mixt nature, as a Mule is produced, or the like creature, from two different Animals, which make them of mixt nature; for As there is a Sympathetical conjunction in one, and the ſame kinde of figure, ſo there is a Sympathetical conjunction in ſome ſorts of figures; but not in all, nor to all, for that would make ſuch a confuſion in nature, as there would be no diſtinction, of kindes; beſides, it were impoſſible for ſome kinde of figures, to make a conjunction with other kindes,

Conjunction of thoſe different motions.

Firſt the earth bears Vegetables, and the plants bear ſeed, and the ſeed, and earth bear Vegetables again.

being

being ſuch a difference betwixt them, ſome from the nature of the figures, others from the ſhape of the figures.

And Minerals are produced by the Conjunction of ſuch Elements, which were begot by ſuch motions, as make, heat, and drought, and cold and dry. Thus all figures are created from different motions, and different degrees, of infinite onely matter; for onely matter joyns, and divides it ſelf by ſelf motions, and hath done ſo, and will do ſo, or muſt do ſo eternally, being its nature, yet the diviſions, and ſubſtractions, joynings, and creations, are not alike, nor do they continue, or diſſolve, with the like meaſure of time, which time is onely as in a reference to ſeveral motions.

But as I have ſaid, there can be nothing loſt in nature, Although there be infinite changes, and their changes never repeated. For ſay a man dies, and his figure diſſolves into duſt, as ſmal as Atoms, and is diſperſt ſo, as never to meet, and every Atome goeth to the making of ſeveral figures, and ſo changes infinitely, from figure, to figure, yet the figures of all theſe changes lie in thoſe parts, and thoſe parts in onely matter; ſo likewiſe ſeveral motions may ceaſe as figures diſſolve, but ſtill thoſe motions lies in innated matter, and each particular figure, in the generality of matter and motion, which is on the dull part, and innated part of onely matter.

Chap. 71. *The Agileneſſe of innated Matter:*

INnated matter ſeems much nimbler in ſome works, then in other, as making Elements, and their ſeveral changes, being more porous then Animals, Vegetables, and Minerals, which are more contracted, and not ſo eaſily metamorphoſed, and on the thin part of dull matter, they ſeem much nimbler, and agil, then when they work on the groſſe part of dull matter; for though the innated matter can work, but according to the ſtrength, yet not alwayes according to that ſtrength; for their burthens are not alwayes equal to their ſtrength; for we ſee in light thin dull matter, their motions to be more ſwift, having leſſe incumbrances, and lighter burthens, unleſſe it be opoſed, and ſtopped by the innated matter, that works in the more ſolid, or thicker part of dull matter, or move ſolid and united figures, yet many times the innated matter, that works on the thin part of dull matter, or in more porous figures, will make way through ſolid and thick bodies, and have the power on thoſe that work on more groſſe matter, for the innate matter that works on groſſe matter, cannot reſiſt ſo well, having greater burthens, nor act with that facility as the others can, whoſe matter is lighter, or figures more pourous; for we ſee many times water to paſſe through great rocks, and mountains, piercing and dividing their ſtrengths, by

the

the frequent assaults thereon, or to; yet many times the passe is kept or lost, according to the quantity of the innated matter, of either side.

Chap. 72. *Of external, and internal figures and Motions.*

FOr the motions of heat and drought begets the Sun; the motions of heat and moisture begets the Aire.

The motions of cold and dry, begets the earth, and the rest of the Planets, and as other motions begot them, so they begot others, and as these Elemental Planets beget in general all figures, which we call creatures in the world; so these figures, as they are matched, beget each particular figures of several sorts; For external figures, are made by internal motions; for though Vegetables, Minerals, and Animals be internal figures, as to the globe of the World, which is the external figures to them, yet they are external figures to those which are created in them, untill such time as they are cast forth of that mould, as I may say, which they were made in, which is the womb, and the several wombs of several kinds, are several moulds, but indeed all moulds differ in their points.

Perchance this subject might be better explained, but my modest thoughts will not give my inquisitive thoughts leave to trace Natures Creations by procreation; Although I beleeve nature, and her works are pure of themselves, but 'tis the Abuse of her works, and not the knowledge that corrupts man-kinde.

Chap. 73. *Of repeating one and the same work, and of varieties.*

NAture may repeat one and the same creature if she pleaseth, that is, the same motions, on the same matter, may create the same creature, by reason the same motions, and the same matter, is eternally in the body infinite: thus the Original cause of producing one and the same is eternal, by reason nothing in nature can be annihilated, and though the infinite matter is but one and the same, yet the infinite part of innated matter, moves infinite several wayes, and by reason of the diversity of motion, there is such varietie, as seldom any two creatures are alike, for motion delights in variety, not so much in the different kindes, as in the particular creatures, which makes me think that motion is bound by the nature of the matter, to make such kindes; Although it be at liberty for particulars, and yet the several kindes may be as infinite as the particulars; as for example, although motion is bound to Animal kinde, Vegetable kinde, Mineral kinde, and also to

make

make ſuch kinde of worlds as this is; yet motion may make infinite particular worlds, as infinite particular Animals, Vegetables, Minerals, and thoſe infinite worlds may differ, as thoſe kindes of Creatures; for worlds may differ from other worlds, not onely as man from man, but as man from beaſt, beaſts from birds, birds from fiſh, and ſo as Vegetables do; for an oak is not like a tulip, or roſes; for trees are not like flowers, nor flowers like roots, nor roots like fruit, nor all flowers alike, nor all roots alike, nor all fruits alike, nor all trees, and the reſt, and ſo for Minerals; gold is not like lead, nor a diamond like a pibble ſtone; ſo there may be infinite worlds, and infinite variety of worlds, and be all of that kinde we call worlds, yet be nothing alike, but as different, as if it were of another kinde, and may be infinite ſeveral kinds of creatures, as ſeveral ſorts, that we can never imagine, nor gueſſe at; for we can gueſſe, nor imagine at no other wayes, but what our ſenſes brought in, or our imaginations raiſed up, and though imaginations in nature may be infinite, and move in every particular brain after an infinite manner; yet it is but finite in every particular figure, becauſe every particular figuse is finite, that is every particular figure comes by degrees from creation to a full growth, from a full growth to a decay, from a decay to a diſſolution; but not a Annihilation, for every particular figure lies in the body infinite, as well as every particular kinde; for unleſſe eternal matter, and infinite matter, and eternal and infinite motions could be Annihilated, infinite figures wil eternally remain, although not in their whole bulk, yet in their parted pieces; for though one and the ſame matter may be made into other figures: yet the former figures have as much a being as the preſent figures, by reaſon the matter that was the cauſe of thoſe figures hath an eternal being, and as long as the cauſe laſts, the effects cannot be Annihilated.

Chap. 74. *Of creation, and diſſolving of Nature.*

THe diviſions, and ſubſtractions, joynings, and creations, are not alike, nor do they continue, and diſſolve with the like meaſures of time; for ſome Vegetables are old, and decrepit at a day old, others are but in their prime after a hundred yeers, and ſo ſome Animals, as flies and the like, are old and decrepit at a yeer old; others, as man is but at his prime at twenty yeers, and will live a hundred yeers, if he be healthy and ſound; ſo in the Minerals, perchance lead, or tin, or the like, is but a flie, for continuance to gold, or like a flower to an oak, then it is probable, that the Sun and the reſt of the Planets, Stars, and Millions more that we know not, may be at their full ſtrength at ten hundred thouſand yeers, nay million of millions of yeers, which is nothing to eternity,

or

or perchance, as it is likely, other figures were at full ſtrength when matter and motion created them, and ſhall laſt until matter diſſolves them. Again, it is to be obſerved that all Spherical figures laſt longeſt, I think it is becauſe that figure hath no ends to ravel out at.

Chap. 75. *Of Gold.*

SOme ſay that Gold is not to be altered from the figure that makes it gold, becauſe *Chymiſts* have tried and cannot do it, but certainly that innated motion that joyns thoſe parts, and ſo made it in the figure of Minerals can diſſolve thoſe parts, and make it into ſome figure elſe, to expreſſe an other thing; but being a more ſolid part of dull matter then that which makes other minerals, it is longer a creating, and diſſolving, then the other figures are, that are of a light or ſofter ſubſtance, and may be the motions that make gold, are of ſlower nature, ſo as it is cauſed from the hardneſſe of the matter, or the ſlowneſſe of the ſpirit, cauſed by the curioſity of the work, wherein they muſt uſe more different motions then in other figures; ſo as it may be a thouſand yeers uniting, or a thouſand yeers a diſperſing, a thouſand, nay ten thouſand; for there is no account, nor time in nature infinite, and becauſe we laſt not ſo long as to perceive it, ſhall we ſay that Gold was eternal, and ſhall laſt eternally; ſo we may as well ſay an Oak, that is a hundred yeers, ere it comes to full maturity, and a hundred yeers, ere it comes to be diſſoved, that it was an Oak eternally, and ſhall be ſo eternally, becauſe a flower, is created, and diſſolved in two or three dayes, but the ſolidity of the matter, and the curioſity in the ſeveral changes, and enterchanges of motions prolong the work, yet it is haſtened, or retarded by the quantity of ſpirits that work therein; for when there is more, it is ſooner formed, when leſs, longer ere it come to its figurative perfection.

Unleſſe a greater power deſtroy it before the natural time.

Chap. 76. *Of Sympathies, and Antipathies, which is to agree, or diſagree, to joyn, or to croſſe.*

THere are infinite ſorts of figures, or Creatures, that have Sympathy, and infinite ſorts of figures, that have Antipathies, both by their exterior, and interior motions, and ſome exterior Sympathie with ſome interior, and ſome interior with ſome exteriors, and ſome exterior with exteriors, and interiors with interiors, both in one and the ſame figure, and with one and the ſame kinde, and with different kinds, and with ſeveral ſorts, which works various effects: and here I will treat a little of Vegetables, and Minerals with Antipathy, or Sympathies, with Animals of all Animals. Firſt, man thinks himſelf to have the Supreme knowledge, but he can but think

ſo,

ſo, for he doth not abſolutely know it, for thought is not an abſolute knowledge but a ſuppoſitive knowledge, for there are as many ſeveral degrees of knowledge, as of innate matter which is infinite, and therefore not abſolute, and as much variety of knowledge, as there is of motions, and though all innated matter is knowing, yet all innated matter is not known; this makes figures to have of each others a ſuppoſitive, but not an abſolute knowledge; thus infinite makes innated matter in ſome kinde, a ſtranger to it ſelf, yet being knowing, although not known, it makes an acquaintance with parts of it ſelf, and being various by interchanging motions, it alſo loſeth acquaintance; the acquaintance we call learning, invention, experience, or memory, the unknown, or not acquainted we call ſtupidity, ignorance, forgetfulneſſe, illiterate, but by the acquaintance of experience, we come to finde the uſe of many things, and by the uſe we come to learn, and from our learning we come to practiſe, and by our practiſe we come to produce many effects, from the hidden and myſtical cauſes, which are the effects, from the onely cauſe which is the onely matter, thus we come to finde the uſe of Earth, Water, Air, and Fire, Vegetables, Minerals, and ſo Animal with Animal, and we do not onely get new acquaintance, which is new experience, but we make uſe of our acquaintance to our own benefit, or at leaſt we ſtrive to do ſo; for it is the nature of life, which life is innated matter, to ſtrive for preheminency, and abſolute power, that is, onely matter would rule it ſelf, but being infinite it neither abſolutely knows it ſelf, nor can abſolutely rule or govern it ſelf, and though it be an endleſſe work, yet motion which is the moving part of nature, cannot deliſt, becauſe it is infinite, and eternal, thus moving matter running perpetually towards abſolute power, makes a perpetual war; for infinite, and onely matter is alwayes at ſtrife for abſolute power, for matter would have power over infinite, and infinite would have over matter, and eternity would have power over both.

Life is in every thing.

It is but one thing, but three words.

Thus infinit and eternal matter joyned all, as to one is alwayes at ſtrife in it ſelf, yet the war is regular, not confuſed; For there this is a natural order, and diſcipline is in nature as much as cruel Tyrannie; for there is a naturall order, and diſcipline often-times in cruel Tyranny.

Chap. 77. *Of different knowledge in different figures.*

CErtainly there are infinite ſeveral kindes, as well as infinite ſeveral ſorts, and particular creatures in nature, and certainly every ſeveral kinde, nay, every ſeveral ſort in every kinde. Knowledge works after a different manner; in every different figure, which different manners we call particular knowledges which works according to the figure, ſo infinite knowledge lies in infinite figure, and infinite figure in infinite matter, and as there are infinite degrees of matter, ſo there are infinite degrees of knowledge, and as there are infinite degrees of knowledge, ſo there are infinite degrees of motions, ſo there are infinite degrees of figures, and as there are infinite degrees, ſo there are infinite kinds, and as there are infinite kindes, ſo there are infinite ſorts, and ſo infinite particulars in every ſort, yet no kinde can be ſaid to have moſt, or leaſt, though leſſe or more; for there is no ſuch thing, as moſt or leaſt in nature. For as I ſaid before, there is onely different knowledge belonging to every kinde, as to Animal kinde, Vegetable kinde, Mineral kinde; and infinite more which we are not capable to know, but two particular ſorts in every kinde; as for example, Man may have a different knowledge from beaſts, birds, fiſh, worms, and the like, and yet be no wiſer, or knowing then they; For different wayes in knowledge makes not knowledge more or leſſe, no more then different paths inlarge one compaſſe of ground; nor no more then ſeveral words for one and the ſame thing, for the thing is the ſame, onely the words differ; ſo if a man hath different knowledge from a fiſh, yet the fiſh may be as knowing as man, but man hath not a fiſhes knowledge, nor a fiſh a mans knowledge.

Likewiſe ſome creatures may have more, and ſome leſſe knowledge then others; yet none can be ſaid to have moſt, or leaſt; for there is no ſuch thing as moſt or leaſt in nature, nor doth the weakneſſe, or imperfection in particular creatures impaire the knowledge of the kinde, or impair the knowledge as I may ſay, belonging to any particular ſort, nor can any one have ſuch a ſupremacy of knowledge as to add to the knowledge of the kinde, or ſort of kinde, as to have ſuch a knowledge as is above the capacity of that kinde, or ſort to underſtand. As for example, a man to know more then the nature of man is to know; for what knowledge man hath had, or can have, is in the capacity of the kinde, though not to every particular man, for though nature may work within her ſelf; yet ſhe cannot work beyond her ſelf, and if there be mixe ſorts of creatures, as partly man, and partly beaſt, partly man, and partly fiſh, or partly beaſt, and partly fiſh,

That is to weaken the degree.

and

and partly fiſh, and partly foul; yet although they are mixt creatures, and may have mixt knowledges, yet they are particular ſorts, and different knowledges, belonging to thoſe ſorts, and though different ſorts have different knowledges, yet the kinde may be of one and the ſame degree; that is, every ſeveral ſort of creatures, in one and the ſame kinde, is as knowing and as wiſe, as another, and that which makes ſome creatures ſeem leſſe perfect then others, or more knowing then others, is the advantage, or diſadvantage of their ſhape, which gives one creature power over another; but different Knowledg in different creatures takes advantages by turns according as it turns to it. And as there is different Knowledge, and different Kinds, and ſeveral ſorts, ſo there is different Knowledge in different ſenſes, in one and the ſame creature; for what man hath ſeen the interior biting motion of Gold, and burning motions of heat? yet feels them we may imagine by the touch, the interior nature of fire to be compoſed of ſharp points, yet our ſight hath no Knowledge thereof, ſo our ſight hath the Knowledge of light; but the reſt of our ſenſes are utterly ignorant thereof; our ears have the Knowledge of ſound, but our eyes are ignorant of the Knowledge thereof; thus, though our ears may be as Knowing as our eyes, and our eyes as Knowing as our ears, yet they may be ignorant of each other, I ſay Knowledge, for ſenſe is Knowledg, as well as reaſon, onely reaſon is a degree above ſenſe, or ſenſe, a degree beneath reaſon.

Chap. 78. *The advantages of ſome figures, ſome degrees of matter, and motions, over others.*

IF we do but ſtricktly prie into the works of nature, we ſhall obſerve, that all internal motions, are much after the manner of external motions, I mean thoſe motions that we can perceive, by thoſe effects, as are ſubject to our ſenſes, and although for the moſt part the ſtrongeſt motions govern the weakeſt, yet it is not alwayes found that they conquer the weaker; for there are infinite ſlights, or infinite advantages to be taken, or miſt in infinite nature, ſome by the ſhapes of their figures, and ſome in the degrees of matter, and ſome in the manner of moving; for ſlights are juſt like the actions of Juglers, Vauters, or Tumblers, Wraſtlers, or the like; for ſhapes I will give one or two for example, as a little Mouſe which is but a weak creature, in compariſon to an Elephant, yet the ſmall Mouſe ſhall overcome an Elephant, by running up through the ſnout, and ſo get into the head, and ſo gnaw on his brain; And a Worm is a weak creature in compariſon of a man, yet if he get into the guts, it will gnaw out his bowels, and deſtroy that figure. So for degrees of matter, what advantage hath the innated matter, or the dull

part of matter, and for motions, moſt often the nimbler, and agile motions, get an advantage on the ſtronger; if more ſlower, and oftener by the manner of motions; for many times a diving motion will have the better of a ſwimming motion, a jumping motion of a running motion, a creeping or crawling motion, of either, a darting motion of a flying motion, a croſſe motion of a ſtraight motion, a turning motion of a lifting motion, ſo an Attractive motion of an expulſive motion, and infinite the like, and every motion may have their advantages by turns, and then the advantages of place, and of times, as I may call it, for diſtinction ſake, ſome Creatures will ſuppreſſe other creatures in the night, when the ſuppreſſers dare not appear to the ſupprſſed in the light, a great Army ſhall be deſtroyed by a little Army, by ſtanding in a lower patch of ground, oft by fighting at ſuch a time of the day, when the ſun ſhines on their faces, but it would be too long for *Methuſalems* life, to ſet down examples, being infinite, but this ſhall ſerve to expreſſe my opinions.

Chap. 79. *Of the figurative figures.*

MOſt figures are lined, and enterlined, as I may ſay, for expreſſion ſake, ſome figures are like a ſet, or neſt of boxes, as for example, half a dozen boxes one within another, ſo every of thoſe figures hath the ſame figure, within one another, the outermoſt figure being the largeſt, the inmoſt figure the leaſt; as for example, a man builds a houſe, firſt he builds the figure of that houſe with wood, as beams, and rafters and lathes; next he laies morter, then is the figure of that houſe in morter, then he laies bricks or ſtones, then there is the figure of the houſe in ſtone, and brick, then it is plaiſtered within the inſide, then there is the figure of the houſe in plaiſter, if it be painted, then there is figure of the houſe in painting; ſo likewiſe an Animal, as a man, firſt there is the figure of a man in bones, as we may ſee in a Anatomie, then there is the figure of a man in fleſh; thirdly there is the figure of a man in the skin, then there are many, different figures, belonging to one and the ſame figure, as every ſeveral part of an Animal is of a different figure, and every part hath different figures belonging thereunto; as man for example, to the hand there is the palm, the back, the fingers, the nailes, yet all makes but one hand.

So the head, there is the brain, the pia mater, the dura mater, the ſcul, the noſe, the eyes, the fore-head, the ears, the mouth, the lips, the tongue, the chin, yet all this is but a head; likewiſe the head, the neck, the breſt, the arms, the hands, the back, the hips, the bowels, the thighes, the legs, the feet; beſides, the bones, the nerves, the muſcles, the veins, the arteries, the heart, the liver, the lights, the midrif, the bladder, the kidnies,

the

the guts, the ſtomacke, the brain, the marrow, the blood, the fleſh, the skin, yet all theſe different figurative parts make but the figure of one man. So for Vegetables, the root, the ſap, the peath, the bole, the bark, the branches, make but the figure of one tree; likewiſe every figure is different, this man is not like that man, this tree is not like that tree, for ſome trees are larger, or leſſer, higher, or lower, more or leſſe branched, crooked, or ſtraghter, ſo in Animals, ſome are of one ſhape, ſome of another, as men, ſome are ſlender and tall; ſome little and low; ſome big and tall, others thick and low; ſome high-noſ'd; ſome flat-noſ'd; ſome thick, ſome thin lipt; ſome high fore-heads, ſome low, ſome broad, ſome narrow, and numbers of like examples may be given, not onely to man, but all other Animal creatures according to their ſhapes, that every particular in one and the ſame kinde, hath different figures, yet every particular kinde hath but one and the ſame motion, which properly and naturally belong to that Kinde of figure, as a horſe to gallop, to amble, to trot, to runn, to leap, to kick, and the like; and man to lift, to carry to walk, to run, to pitch, to dig, to ſhut, to chop, to pull back, to thruſt forward; likewiſe every particular part in one and the ſame Kinde, hath but one and the ſame kinde of motions, local or otherwiſe, and ever particular bird, hath but one, and the ſame kinde of motion in their flights, and in their feeding;

So beaſts, every particular kinde hath but one and the ſame manner of motion, and feeding; ſo likewiſe all mankinde hath after one and the ſame Kinde of motions belonging naturally to every particular part of his body, the onely difference is in the ſtrength, or weakneſſe, their reſtraints or facilities but not different in manner of the movings. But to return, to the figures, I ſay there are different figures belonging to one and the ſame kinde of figure, but the ground or fundamental figures in every particular figure, are there. (As for example) a tree at firſt is the figure of wood, the ſecond is ſuch a ſort of wood, as a Cedar, an Oak, an Elm, an Aſh, and the like; alſo of ſuch a nature of wood, ſome fitter to burn then to build, others that will grow but on ſuch, or ſuch ſoils, others to laſt longer, or die ſooner, or bud and bear in ſuch, and ſuch ſeaſons, ſome to bear fruit, others to bear none.

Likewiſe for Animals, the firſt figure is to be an Animal, that is, to have a local figure, the ſecond figure is to be fleſh, not wood. The third is to be ſuch a kinde of fleſh as mans fleſh, not bears fleſh, or dogs fleſh, or horſe fleſh, or cows fleſh, and more examples may be given, then I am able to repeat, or my book to infold, but Animals and Vegetables have more different figures, belonging to every particular, figure or Kinde then Minerals, eſpecially metals, which are as it were compoſed of one piece.

Fiſh is a kind of fleſh.

Chap.

Chap. 80. *Of the gloomy figures, and figures of parts, and of one piece.*

AYre is not a ſhining body of it ſelf, but as the lines of light ſhine upon it, it is ſmooth, and may be a gloſſie body, but not a ſhining; for though there are infinite ſeveral ſorts of brightneſſe and ſhining, yet two I will deſcribe.

As there are two ſorts of ſhining figures; ſome that caſt forth beams of light, as bright ſhining fire, and likewiſe from ſome ſorts of ſtones, bones, and wood, ſo there are ſome ſorts of figures that onely retain a bright ſhining quality in themſelves, but caſt forth no beams there-from; or elſe ſo weak and ſmall, as not uſeful to our ſight, but what is repreſented to us thereon, by other lights; this ſort is water, metal, and vulgar ſtones, which perchance ayre may have ſuch a ſhining body.

Theſe ſhining bodies, as water, or metal, or the like, are not perceived in the dark, but when light is caſt thereon, we do not onely perceive the light, but their own natural ſhining quality by that light.

Again, ſome figures have onely a gloſſe, which is a faint ſhining, like as a tained light, or an eclipſed ſhadow, as all the pores Vegetables, and Animals skins have; and ſome figures are gloſſy through the thinneſſe, or tranſparentneſſe, not in the nature, for by reaſon the figure is thin, and tranſparent, the light ſhining, though tranſparent doth not onely ſhew the light, but the light gives thoſe figures a gloſſe.

Some figures, as I have ſaid, are as it were all of one piece, as ſome ſorts of earth, water, vapor, and ayr, which may be metamorphoſed, by contracting and dilation.

Others of divers pieces, and ſeveral works, as Vegetables, and Animals, wherein are joynts and knots, ſome parts ſoft, and ſome liquid, ſome firme, ſome hard, every part having a ſeveral figure, which varieties and contrarieties ſerve to the conſiſtence, and preſervation, but of one perfect figure; but Animals of all other figures have the moſt variety of works, and ſeveral motions.

Chap. 81. *Of the dull and innated matter.*

SOme may ſay, that if there were infinite dull and in-moving matter, ſome of it may lie unmoved eternally. I anſwer, that cannot be, for as there is infinite dulneſſe and ſolidity; ſo there is infinite acutenes and facility, by which I mean ſearching, and penetrating, which in ſome ſenſe makes it equal, if there be equality in infinite, but the innating matter works not upon the dull matter, as upon a new material; for the innate matter is mixt with the dull part of matter;

For

For the innated matter moves in the dull part of matter, and on the dull part of matter, as I have deſcribed in my firſt part, for the innated matter takes not freſh and new (as I may ſay) for diſtinction ſake, to make a figure with; but turns the dull matter into ſeveral figures, joyning each degree as the innate matter will, or as it is proper for ſuch a kinde of figure, for ſome degrees of matter will not make, I do beleeve ſome kinde of figures, but the dull part of matter, is not mixed in the innate matter, although the innate matter is mixed in that, for the innate matter is pure in it ſelf, without any groſs mixture, for it is the infinite pure part of matter infinite, it is the ſpirits, or eſſence of nature.

Chap. 82. *An anſwer to an old queſtion, what becomes of the ſhape, or figure, or outward forms of the old figure, when the nature takes a new form.*

ALL Created, or not created, or created, and diſſolved again, figures or forms, lie in onely matter, either in by parts, or in the whole, for the materials of every figure is but of one matter, and the lump of all figures is the figure of eternal matter, for the infinite particular of figures, is the infinite form, ſhape, or figure of infinite and eternal matter, and the creation, diſpoſals, and diſſolvings of figures, are the ſeveral actions of that onely matter; for infinite motions are the infinite life, of the infinite and eternal life, which life, is as eternal matter, being part of the matter it ſelf, and the manner of moving is but the ſeveral actions of life; for it is not an abſence of life when the figure diſſolves, but an alteration of life, that is, the matter ceaſeth not from moving, for every part hath life in it, be the parts never ſo ſmall, or diſperſt amongſt other parts, and if life, there muſt be conſequently ſenſe, if ſenſe, knowledge, then there can be no death, if every part hath life in it, ſo that which we call death, is onely an alteration of ſuch motions, in ſuch a figure, in onely matter.

Chap. 83. *Of Tranſmigrations.*

TRanſmigrations are not metamorphoſed, for to metamorphoſe is to change the ſhape and interior form, but not the intellect, which cannot be without a new creation, nor then, but ſo as partly the intellect changes, with the ſhape and interior form, but all bodies are in the way of tranſmigrations perpetually.

As for example, the nouriſhing food that is received into the ſtomack tranſmigrated into Chylus, Chylus into blood, blood into fleſh, fleſh into fat, and ſome of the chylus tranſ-

migrated into humors,as Choler,Flegme,and melancholy;ſome into excrement,which tranſmigrats through the body,into dung, dung into earth, earth into Vegetables, Vegetables into Animals; again by the way of food, and likewiſe Animals into Animals, and Vegetables into Vegetables, and ſo likewiſe the elements.

But indeed all creatures are created by the way of tranſmigration.

The yolk and white is mixt into one ſubſtance which we call an addle egge; before it be a chick it is bloody.

As for example, hens, or other fouls lay eggs, and then ſit on them, from whence a nouriſhing heat is tranſmigrated from the hen into the eggs, which tranſmigrates into a kinde of a Chylus, then into blood, blood into fleſh, fleſh into ſinews, ſinews into bones, and ſome into veines, arteries, brains, and the like.

Tis a lump of fleſh before it be bone, or ſinew.

For tranſmigration is onely the mixing ſifting, ſearching, tempering faculty, of innated matter, which is ſelf-motion, and motion is the onely tranſmigrater, otherwiſe infinite matter would lie idle eternally, though I cannot well conceive how infinite can be without motion; but howſoever we perceive ſo much as there are proper motions, and mixtures of matter belonging to every particular figure; and though figures doth produce figures; yet figures do not order the creation, for it is not the figures that create, but creation that produceth by figures, which creation is motion, which motion is innated matter, which matter creates and diſſolves by the way of tranſmigrations, all figures diſſolving to create, and creates to diſſolve, but diſſolving, and creation, which is that we call life and death, hath onely a reference to the figures, but not of the nature of the matter.

Chap. 84. *Of metamorphoſing of Animals and Vegetables.*

And then it is no metamorphoſing I ſhal declare.

IT is impoſſible for Animals and vegetables to be metamorphoſed, without a creation, as to transform a man into a tree, or a tree into a man, nor a man into the form of a beaſt, as to turn mans-fleſh into horſe-fleſh, or horſe-fleſh into mans-fleſh or one mans-fleſh to turn into another mans-fleſh,or an Oak, into a Cypres, or a Cypres into an Oak,and ſo the like in all Vegetables, and Animals; thus Transforming the interior forms, or rather changing the interior form, like garments, putting one, and another interior form, upon one and the ſame intellect nature, which is impoſſible, by reaſon the interior forms, and intellect natures, are inſeparable, ſo that deſtroying the one, deſtroyes the other, and a change cannot be made of either, without the diſſolution of the whole, no more then a man can change the whole building, without pulling down the houſe, for though they may make ſome alterations in the outward ſhape as

to

to add ſomething more, or take away, and make all leſſe, or thicker, or thinner, or higher or lower; but cannot alter the interior form, which is the foundations, but if they pull it down, the ſame materials may be put into another form, or into the ſame form it was at firſt, but it muſt firſt be new built again, before it can have thoſe forms, and they muſt ſtay the time of building; ſo for every Vegetable creature, and Animal creature, they cannot be metamorphoſed, by the reaſon metamorphoſing is to change their forms without a new creation, and they cannot change their forms without a diſſolution, and then created anew, by reaſon the intellect, and the interior form is as one body, and not to be ſeparated; for the interior forms of theſe creatures, and the intellects depend upon one another, and without one the another cannot be.

The intellect, and the interior form may be divided together into parts; but not ſeparated apart, though the ſeveral ſorts of one and the ſame kinde, as Animal kinde may be mixed in their creations, as to be ſome part a beaſt, ſome part a dog, or the like, and part a man, and ſome creature partly a bird, and partly a beaſt, or partly a beaſt and partly a fiſh; yet the intellect is mixt with the interior form, and the exterior ſhape with the interior form.

And then it is called a new creature rather then a metamorphoſed creature &c.

The like in vegetables, and if the interior forms, and intellects of each ſort, nay of each creature, cannot be changed, much leſſe of each kinde, thus the intellect natures, and interior forms of it, can never be without a new creation, and as for the exterior ſhapes of Animals may be altered but not changed; for Animals of all other creatures have their ſhapes moſt unite to the interior form, and ~~other~~ intellect nature of any other creature in nature.

But I deſire my readers not to miſtake me, for want of terms, and words of Art.

For the interior or intellect nature I mean is ſuch properties, diſpoſition, conſtitution, Capacity, and the like, that makes it ſuch a creature.

The interior form is ſuch a ſubſtance, and ſuch a ſort as fleſh, or fiſh, or wood, or metal, and not onely ſo, but ſuch a ſort of fleſh, as mans-fleſh, horſe-fleſh, dogs-fleſh, and the like.

So the wood of oak, the wood of maple, the wood of aſh; And the like, ſo the gold metal, the iron metal, and the like.

For horſe-fleſh is not mans-fleſh, nor the wood of oak, the wood of aſh, nor the metal of gold, the metal of iron.

And as for the exterior form, I mean the outward ſhape.

Chap. 85. *The Metamorphoſing of the exterior forms, of ſome figures.*

ALL figures that are of a united piece, as water and fire are, and not in parts, as not having ſeveral parts of different natures, as Animals and Vegetables have, may be Metamorphoſed out of one form into another, and rechange into the original form again, yet it is onely their exterior form, not their interior nature. As for example, water that is frozen, or turned to hail, or ſnow, the exterior is onely metamorphoſed; For the interior nature which is the circular line is unaltered, likewiſe when the circular line is extenuated into air, the interior circle line is not changed; but when the interior nature is diſſolved, and the matter it was compoſed of tranſmigrates into other figures.

Which circular lines I ſhal expreſſe hereafter.

Likewiſe metals when the interior nature is changed, it cannot be rechanged again without a new creation; for if we can turn one metal into another, yet it is not as the way of metamorphoſing, but tranſmigrating, otherwayes we may ſay, we can turn Animals and Vegetables into water, when we diſtil them, but the magick of Chymiſtry ſhall nor return them to their interior nature, nor exterior ſhape. Again, although their deſires make them beleeve it poſſible to be done, but ſubſtracting is not metamorphoſing, but rather tranſmigrating, and ſubſtracting is one of the chiefeſt faculties of tranſmigration.

And as for thoſe creatures that are compoſed of parts of different natures (as I have ſaid) their exterior form cannot be metamorphoſed, becauſe thoſe motions that metamorphoſe one part, cannot metamorphoſe another.

And though every part is different, yet they generally unite to the conſiſtence of the whole figure, whereby the ſeveral tranſforming motions on the ſeveral parts would make ſuch a confuſion, as upon neceſſity muſt diſſolve the intellect nature, and interior form of that particnlar figure, thus ſtriving to alter would deſtroy.

AN

EPISTLE

TO THE

Unbeleeving Readers

IN

NATURAL PHILOSOPHY.

MAny ſay that in natural Philoſophy, *nothing is to be known*, not the cauſe of any one thing, which I cannot perſwade my ſelf is truth; for if we know effects, we muſt needs know ſome cauſes, by reaſon that effects are the cauſes of effects, and if we can know but one effect, it is an hundred to one, but we ſhall know how to produce more effects thereby.

Secondly, the natural Philoſophy is an endleſs ſtudy without any profitable advantage; but I may anſwer, that there is no Art nor Science, but is produced thereby, if they will without partiality conſider from whence they are derived.

Thirdly, that it is impoſſible that any thing ſhould be known in natural Philoſophy, by reaſon it is obſcure and hid from the knowledge of man-kinde.

I anſwer, that it is impoſſible that nature ſhould perfectly underſtand, and abſolutly know her ſelf, becauſe ſhe is infinite, much leſſe can any of her works know her.

Yet it doth not follow, that nothing can be known, becauſe all is not known.

As for example, there are ſeveral parts of the world diſcovered, yet it is moſt likely not all, nor may be never ſhall be, yet moſt think that the whole world is found, becauſe *Drake*, and *Cavendiſh* went in a circular line until they came to the place where they ſet out at firſt. And I am moſt confident that moſt of all thought all the world was known unto them before the *Weſt-Indies* were diſcovered, and the man which diſcovered it in his brain before he had travelled on the navigable ſea, and offered it to King *Henry* the ſeventh, who ſlighted him as a fooliſh fellow, not beleeving his intelligence, and no queſtion there were many that laughed at him, as a vain fool, others pitied him, as thinking him mad, and others ſcorned him, as a cheating fellow, which would have couzened the King of *England* of a ſum of money; but the Queen of *Portugal* being wiſer then reſt imployed him, and adventured a great ſumme of money to ſet him forth on his way, which when the ſucceſſe was according to the mans Genius brain, and had brought the Queen by the diſcovery, gold and ſilver mines for her Coine, then all other nations envied the King of *Spain* who was heir, and like a company of dogs which fight for a bone, went together by the ears, to be ſharers with him.

So the Biſhop, who declared his opinion, of the Antipodes, was not onely cryed down, and exclaimed againſt by the vulgar which hates all ingenuity, but learned Scholers ſtood up againſt him, and the great and grave Magiſtrates condemned him as an Atheiſt for that opinion, and for that reaſon put him from his Biſhoprick, and though he had favour to ſpare

his

his life, which opinion hath ſince been found out by Navigators, but the ignorant & unpractiſed brains, think all impoſſible that is unknown unto them.

But put the caſe many went about to finde that which can never be found (as they ſaid natural Philoſophy is) yet they might finde in the ſearch that they did not expect, which might prove very beneficial to them; or put the caſe ten thouſand ſhould go ten thouſand wayes to ſeek for a cabinet of precious Jewels, and all ſhould miſſe of it but one, ſhall that one be ſcorned and laughed at for his good fortune, or induſtry? this were a great injuſtice.

But ignorance and envy ſtrives to take off the gloſſe of truth, if they cannot wholy overthrow it; and thoſe that write muſt arm themſelves with negligence againſt cenſure.

For my part I do, for I verily beleeve, that ignorance and preſent envie will ſlight my book; yet I make no queſtion, when envy is worn out by time, but underſtanding will remember me in after ages, when I am changed from this life; but I had rather live in a general remembrance, then in a particular life.

Earth Metamorphoſed into water, water Metamorphoſed to vapor, Aire and fire, at leaſt into heat.

PART III.

CHAP. 86.

MOtion forms a round lump of earth, or ſuch like matter, by extenuating ſwels it out, and as the ſwelling increaſes, the circumferent enlargeth, and when its extended further then this ſolid form, it becomes pores, and the parts looſer. This degree of extenuation, makes it mud, when it extends further then the degree of mud, it turns to a ſofter form, as that of ſlime; the fourth extenuating degree ſhapes it into a perfect ring drawing all the looſe parts into a compaſſe line, this becomes water, and the difference of a lump, or ball of earth to the watry circle, for a round lump is when there is no ſpace, or diſtinct lines, and a circular ring is a diſtinct line with a hollow center, that is, an empty place, in the midſt of a round line, ſo they may be a round ball, but not a ring, or a round circle line, and a circle line, and not a ball, and as I ſaid, when it comes to ſuch a degree, of extenuating, it turns water, that is, to be wet, liquid and fluid, and according as the circles are, is the water more or leſſe, and according as the lines are extenuated, or contracted, is the water thicker or thinner, colder or hotter, heavier or lighter, and according as the lines are round, or flat-edge, pointed, or ſmooth, is the water freſh, ſharp, ſalt, or bitter, but theſe circles may not onely dilate, and contract ſeveral wayes, but after ſeveral faſhions, as to make vapor, air, fire, ſnow, hail, ice, and froſt, as I ſhall declare in my following chapters.

Chap.

Chap. 87. *Of wetneſſe.*

WE may perceive that whatſoever is hot and dry, and cold and dry, ſhrinks inward as towards the center, and whatſoever is hot and moiſt, and cold and moiſt, dilates as towards the circumference, ſo that all moiſture is wrought by extenuating motions, and drought, by contracting motions, and not onely extenuating motions, but ſuch ſorts of extenuating motions, and drought by contracting motions, and not onely extenuating motions, but ſuch ſorts of extenuating motions as in circular figures, which circular figures make water, ſo ſoft, ſmooth, and flowing, ſmooth, becauſe circular; for Circles make it ſmooth, the figures having no end extenuating makes it ſoftby ſpreading and looſing the parts, as flowing by reaſon dilations drive all outward as toward the circumference yet the degree of extenuating may out-run the degree of wet; for wet is in ſuch a degree of extenuating circles as I may ſay, the middle degree, yet there are many ſorts of wet, as oylie, wet, and watry; but I have deſcribed that in my chapter of oyl, but I take oyl rather to be liquid and moiſt, then wet; For there is difference betwixt moiſt, liquid, and wet, for though moiſt and liquid is in a degree of wet, yet it is not an abſolute wet, for diſſolved gums are liquid, not wet, melted Sugers are liquid, not wet, oyl is more liquid then wet, and ſmoak may be ſaid to be liquid, as being of an oyly nature, and air rather to be moiſt then wet, and duſt, Aſhes, flame, light, winde, may be ſaid to be fluid, but not liquid nor wet.

Chap. 88. *Of Circles.*

A Circle is a round figure without ends, having a circumference, and a center, and the figure of a circle, may be many wayes contracted, but can be but in one way extenuated, which is by inlarging the compaſſe, of the line; and the reaſon is, becauſe it is a round piece, without ends; for a ſtraight line may be drawn out at either end; but if a circle be drawn out of the compaſſe, it may ſtretch out of the one ſide, but it will pull in the other ſide after it, unleſſe the line be broke, and then it is no longer a circle, thus we can extend no part out, but another part muſt contract to give way to that part that goeth out.

Chap. 89. *Of Softneſſe.*

ALL that is wett is ſoft, I mean that which is naturally wet; but all that is ſoft is not wet, as hair, wool, feathers, and the like.

Likewiſe all that is ſoft or wet is made by extenuating motions; now ſome may ask me, why extenuating motions ſhould cauſe figures to be ſoft, more then any other? I anſwer, firſt, that all extentions cauſeth porouſneſſe, or ſpungineſſe, by ſpreading or looſing parts; and all that are porous tend to hollowneſſe, and all that is hollow tends to ſlackneſſe, and all that are porous hollow, and ſlack tend to ſoftneſſe; for we may perceive whatſoever figure is porous, is not ſo firm, ſtrong, nor hard, as thoſe which are cloſe compact; for that which hath no Vacuum, or Convenient diſtance, hath not ſo much Liberty, as that which hath Vacuum; for Vacuum is ſpace and diſtance betwixt parts, which gives thoſe parts liberty to move, and remove, and that which hath moſt liberty is moſt looſe, and that which is moſt looſe is leaſt contracted, and that which is leaſt contracted, is moſt pliant, and that which is moſt pliant is ſoft. But I deſire my Readers would not miſtake me, for as there is hard, ſoft, light, heavy, thick, thin, quick, ſlow, belonging to the nature of the onely infinite matter, ſo there are belonging to ſuch ſhapes, or figures made by the working of the infinite motions making infinite figures out of infinite matter; but the difference is, that what is in the nature cannot be altered, but what is done by the working of motions may be undone again, for the effects may alter, but not the cauſe; thus motion and figure, or figure by motion may alter, but not the nature of the matter; For motion and figure are but the effects of the onely and infinite matter &c.

I mean natural extenuations.

As the pores of the skin.

Chap. 90. *Of Liquors.*

ALL liquors are wrought by extenuating motions, and all that is liquid and wet, are circles extenuated to ſuch a degree, and after ſuch a manner, and all that are liquid and wet, is either water or of the nature of water, as alſo of oyls, vitrals, ſtrong-waters, all juices from fruits, herbs, or the like, or any thing that is liquid and wet; but though all that is liquid and wet naturally agree in extenuating circles, yet thier circle lines are different, which cauſeth the different effects, for ſome have different effects interiorly, others exteriorly, and ſome both interiorly, and exteriorly, for ſome have circular lines of points, others have circular lines pointed, others have circular lines of points pointed, others have circular lines of points edged, ſome have ſmooth circle lines onely edged; as the ſharp edge of a knife, or the like, others have circle lines

Oyl, hot-waters, wine, vitrals, aquafortis.

edged of one ſide of the line, and pointed on the other ſide, ſome their circle lines are flat, others their circle lines are round, ſome their circle lines are twiſted, others plain, ſome checkred, others ſmooth, ſome more ſharpe-edged, or pointed then other; ſome ſmoother, and ſome rougher then other; And infinite more that I know not how to deſcribe; But theſe lines, nor circle points, nor edges, are not ſubject to our ſenſes, although their effects may make them ſubject to our reaſon, for nature works beyond our ſenſe, but reaſon is part of the ſenſe of nature; but of all wet liquors oyl is moſt different from the effects of water, for all other wet liquors do ſtrive to quench fire, but oyl doth aſſiſt it, yet all vitrals have an exterior burning faculty, which oyl hath not, and although all ſtrong wet liquors will flame when it is ſet on fire, yet they will quench out fire, if enough be caſt thereon.

Chap. 91. *The extention and contraction of circles.*

THe nature of extention ſtrives to get ground, that is, ſpace, or compaſſe, and to diſperſe, or level parts as it were, and the nature of contraction ſtrives to thruſt out ſpace and compaſſe, and to thruſt up parts cloſe together, and this is the reaſon that a circle may contract ſo many ſeveral wayes, becauſe contraction flings out the compaſſe, and makes uſe of the line, laying the line into millions of ſeveral works.

And yet the exterior form which is the circular line, be one and the ſame, that is, the circular line is not divided, but when thoſe works are undone, and the line extended to the full compaſſe, it receives the original form, which is a round circle; for as they were contracted without breaking the circle, ſo they may be extended into a circle again.

Likewiſe the circular forms may be wrought with mixt motions, as partly by contraction, and partly by extenuation, as when a round circle is wound about a ſtaff, or pole, or the like; for though the winding about the ſtaff be a contracting motion, or at leaſt one way, which is when it draws inward, as towards the center, yet by winding it lengthwayes, or upward, is a kinde of an extenuation.

Likewiſe, a circle or ſmoak when it curls in rings, before the circle break, as we ſhall oft times ſee it doth contract, as folding and half curling, ſo it extenuates as it ſpreads and weares out. Likewiſe take a round ſtring, that is, joyn the two ends, and put this circular ſtring double, and then winde it ſerpentine wayes, and the like, and though the winding, or twiſting about is contracting, yet winding or twiſting one ring before another is extenuating.

Here have I ſet down after what manner of wayes are contracted, or continuated circles, and thus millions of ſeveral works

works may by circles be wrought, and ſeveral figures made thereof; Likewiſe for circular lines, ſome may be broad, ſome narrow, ſome round, ſome flat, ſome edged, ſome twiſted, but thoſe that are flat are moſt apt to be edged.

Likewiſe there may be circle lines with ſmooth lines, ſome pointed, ſome checkred, ſome twiſted, ſome braided, and the like.

But although the circle compaſſe is perfect, yet the line is not a perfect Circular compaſſe, becauſe the roughneſſe makes it uneven. Thus as I have ſaid before, milions of changes may be in circles, but perchance ſome will ſay, it is no longer a circle, when it is turned ſquare, or triangular-wayes, or the like.

I anſwer, it is a circle ſquared, but not a circle broke, for as long as the circle is whole, the *interior nature is not diſſolved*, let the exterior figure be after what manner it will or can; for ſtill it is a natural circle, although it be put into a Mathematical ſquare, or the like; ſo thoſe exterior figures, are but changed ſhapes, not the natural form, but a natural ſquare is to have four diſtinct lines, and a triangle three diſtinct lines, and a cupe ſix, as I take it, or ſixteen; but it is to be obſerved, that all thoſe figures that naturally are made of one piece, without diſtinct parts, or ſeveral tempered matter, may change, and rechange their ſhapes, and yet keep their own interiour nature *intire, that is* the nature proper to ſuch a figure; but thoſe figures that are made of many diſtinct parts, or ſeveral tempered matter, would make ſuch a confuſion in their transformations, as would ruin the intire foundations.

Chap. 92. *Of congealed water.*

WAter is not alwayes exteriorly wet, or fluid, as we may ſee alwayes when it is congealed to ſnow, ice, and hail, yet ſtill it is water, keeping the interior nature of being wet and fluid, onely the cold contractions have, as may ſay, altered the face or countenance thereof; for it is to be obſerved, as there are extenuating motions, thruſting and ſtretching, inlarging further and wider out in compaſſe, bredth, length, and depth, as from the center to the circumference, ſo there are contracting motions together, draw winde, twiſt and pull in, as from the circumference to the center, and not onely by interior motions, but exterior motions; as for example, cold contraction upon water circles, or any thing that is porous and ſpungie, draws, and gathers them into ſeveral works, or draws them into a leſſe compaſſe, as ſtrings do a purſe, or like fiſhers or faulkners nets.

But ſnow, hail, and froſt, and ice is made by a level contraction, as if a Circular line ſhould be laid upon a flat ground, and be drawn a particular work, as for example, according

to the number of watry circles, there is ſuch a quantity of water, and if the quantity of water be more then the ſtrength of the cold contraction, it is frozen more or leſſe, now the ſeveral figures which cold contraction draws to make ſnow, hail, ice, and froſt, are after this manner, as firſt the interior nature of the water is a round circle like a ring.

When it contracts into hail, the exterior figure contracts into a ball, or lump, as if one ſhould winde up a double line, or thread into a bundle, or bottom.

Snow is made by contraction, as if one ſhould draw a round line into a three ſquare figure, as triangular way.

Ice, as if we ſhould draw a round line into a four ſquare figure, as after a cupe way.

Froſt is made by ſuch contracting motions, as if a round line ſhould be drawn into a ſurfling, as a crackling figure.

When this congealed cold thaws, it is either by the interior ſtrength of dilating motions, or by an exterior heat that draws theſe contractions out into ſmooth extenuating circles again.

Thus circular lines may be drawn from the round compaſſe, to be four ſquare, three ſquare, or length-wayes, as one would clap the brim of ones hat together; and millions of ſeveral works, and never divide the circular lines, but I will not ſay by a Mathematicall rule, though nature is beyond our learning.

And that which makes ice and hail more ſhining then froſt, and ſnow, is, that the lines are evener; for all figures that are compoſed by the way of lines, are apt to ſhine, and thoſe figures that have feweſt points, or ends are ſmootheſt.

Now ſome may ſay, or ask, why I ſhould think ſnow is made triangular wayes? My reaſon is, becauſe it ſeems rougher, and not ſo united as ice, or hail, which ſhews the interior figure hath more points, or unevener numbers, or unequal lines, and a triangular figure is not ſo ſmooth, or at leaſt ſeems not ſo, as a circular, a paralel, or cupe; for in the angulars the points and lines are odd, and the lines run ſlope-wayes, whereas the figure of a cupe, although it hath more points, yet the figure is more proportionable, by the even number of the points and lines; for as there are four points, ſo there are four equal lines, which make an equal number, when in the figure of a triangular the points and lines are odd; for though there are a plural number, yet it is an uneven number, as being odd. And as I have ſaid, the lines are ſlope when the figure of a cupe is juſt ſquare, beſides triangular points being odd, multiplie and ſubſtract by reflections, as we ſhall ſee by triangular glaſſes, that from one face millions are made by ſubdividings. Thus what is made uneven by odd numbers, are made even by equal numbers, and the odd points,

and

and ſlope lines, make the figure of ſnow rough, and the equal points, and ſtraight lines make the figure of ice ſmooth, but I treat here of exterior figures, or rather countenances, not of the interior form, for their contractions change the exteriors, not the interiors.

But if I be out, and miſtake, either in termes of art, or otherwiſe, I muſt intreat my readers to pardon it, for I am no Mathematician, onely I have gathered here and there ſome little parcels or crums from the diſcourſe of my friends, for I have not much kept the company of ſtrangers, nor converſed with dead Authors by books, but theſe parcels I have got, I place according to my own fancy, if they ſound probably, I have my ends, and the lines of my deſires are pointed with a ſatisfaction.

Chap. 93. *Motion changing the figure from water to fire.*

WHen theſe watry circle lines begin to inlarge, they grow ſmaller, and thereby become leſſe wet, and more thinne, as vapor which is leſſe wet then water, and not ſo groſſe; for as I ſaid before, when the circle comes in ſuch a degree of extenuating, it becomes wet, and beyond ſuch a degree, it becomes leſſe wet; and ſo leſſe and leſſe, as before it came to ſuch a degree, it became more and more wet, as from being pores to ſoft, from ſoft to liquid, from liquid to wet, likewiſe from wet to moiſt, from moiſt to thin, which thin is air. From earth to water.

But when the extenuating lines come to ſuch a degree of ſmalneſſe, as to cut, as a very ſmal line will do, which is to ſuch a degree, as to be ſharp as an edge, it makes it in a degree towards burning fire, ſo far as to become ſulphury hot, as we know by the ſenſe of feeling, we finde the air to be hot. This ſort of air which is made of watry circles, is like ſeething hot water, for it is a moiſt heat, and not like the natural air, for this is but a Metamorphoſed air; for the interior nature of water is undiſſolved, onely the exterior is altered, the lines being become ſmall and edged, by the fair extenuations, but when thoſe circles extenuate ſmaller then the quantity of matter will afford to give a compaſſe, it breaks, and turns to hot burning fire; for the extenuating motions therein ceaſing not, do ſtretch thoſe lines ſo ſmal, as they fall into pointed parts; this alters the interior nature from being water, to burning fire, for the interior nature of water is the circle line, but if thoſe lines be drawn by contracting motions into bigger lines, and leſſe circles, it becomes from thin hot air to vapor, or miſts, and from vapor to water, and ſo from water to ſlime, from ſlime to mud, from mud to earth, as it did extenuate, ſo it contracts, if nothing hinders the ſame; for contraction draws in

in the lines to ſuch a bigneſſe, like as a ſmaller thred to a bigger thred, ſo from the thinneſt air to the thickeſt air, from groſſe air to the thin vapor, from thin vapor to thick vapor, from thick vapor to water to ſlime, from ſlime to mud, from mud to earth; but according as the contracting and dilating motions are quick, or ſlow, it is ſooner or longer turning out of one ſhape into another, and if any of the circular lines break by other motions or figures before it coms to the furtheſt extention, the quantity becomes leſſe waſting that matter into figures of other natures, being diſſolved from that natural figure; thus that ball, or lump may be diſſolved, like as Animals, or the like; For no queſtion theſe balls are created and diſſolved as Animal kinde, and are as numerous as other creatures, and ſome laſting longer then others, and ſome diſſolving ſooner; though their creations are different, one being produced by procreation, the other by extenuation: thus theſe elements are increaſeable, and decreaſeable, and other creature are; and when the interior nature is altered, it diſſolves as other creatures do, onely the exterior with the interior diſſolves, which moſt of other creatures do not, for when the interior is altered in Animals, the exterior is perfect, and diſſolves more by degrees.

Chap. 94. *Of Oyl.*

OYL is partly of the nature of fire, and partly of the nature of water; for as it is ſoft, fluid, liquid, and moiſt, it is of the nature of water; as it is hot burning and flamable, it is of the nature of fire, for that which makes it fludi and liquid, is by extenuations, and that which makes it moiſt and liquid is by extenuating circles, and that which makes it burning, is, that thoſe circular lines are compoſed of pointed parts, which when fire and oyl meets, the fire breaking thoſe lines a ſunder, ſets thoſe pointed parts at liberty, which cauſeth it to riſe in a flame, and the reaſon why it flames, is, that it doth not ſuddenly loſe the circular extenuating nature; for flame is ſomewhat of the nature of water, as being fluid, though not wet, and the reaſon why flame is fluid, is, becauſe it aſcends in a circular motion, for though the aſcent be in a ſtrict parrelled line, yet the matter is after a circular figure, as a hollow ſpungy body, as after this manner or the like, which ſhuts upward, like an arrow out of a bow, onely imagining the arrow to be in ſerpentine * ſhape, and to turn and ſpin about as it aſcends, likewiſe the body to extend, or ſpread outward, according to the bulk or quantity, which ſeveral figures, or ſeveral motions, may be all at one time, and in one and the ſame thing, and work to one and the ſame effect, and to ſeveral effects at the ſame time, which cauſeth it to be fluid, liquid, and light, for light as well as oyl, water, or flame, is fluid, cauſed

* As thus

by

by extenuating motions, for as water will run forward when it hath liberty, or run backward in a torrent when it is ſtopt, ſo light will enter when it hath paſſage, or run back by reflection if it be ſtopt, but all thoſe fluidities are different by reaſon their extenuations are different; For light is cauſed by ſwift extenuating paralel lines; water, oyl, and the like by extenuating circular lines, which make it moiſt, and liquid, as well as fluid, but flame takes part from all, for it is light and fluid by the ſwift extenuating parallel lines, it aſcends in, and liquid, although not wet, by the circular motions it aſcends up in, and burning by the ſharp parts it is compoſed of; vitral is after the ſame nature of oyl, onely the lines are edged, as a knife, or the like, or ſharp edged tools, which make it have an exterior preſſing quality, as burning fire hath; but the exterior of oylie lines are ſmooth, which makes it ſoft, and glib, and not ſo ſharp and penetrating as vitrals, or the like are. Or rather like flame.

Thus flame, light, oyl, fire vitrals, waters, have mixt motions, to make one figure, and many figures, to make thoſe figures which make them to be of mixt qualities producing mixt effects, as indeed all effects are of a mixt nature.

Chap. 95. *Of Metals.*

ALL Metals are created after the manner of circle lines, as water, onely the lines in metal are contracted, as drawing inwards, and water circle lines are extended outward, but in all metals the circle lines are flat, and edged, having a cutting and a ſubdividing nature, and by reaſon the exteriour nature is of a circle figure, it is apt to be fluid, and to flow as water doth, when the exterior is melted by forcible motions, then it is one, as that of fire, which draws out the contracted circles of metals, cauſing it to be fluid by extention, yet the extention is not natural, as it is in water, but forced by an over-powerful motion; for the nature of metal is not to be fluid, which is the reaſon that aſſoon as it can get libertie, that is, when the moer ſtrong motions let go their hold, it contracts into a firm and hard body: again, it breaks not the interior circle, for then the nature alters, for as much as metals loſeth in the weight, ſo much is changed of that quantity, from the natural quality, and though ſome metals do not, waſt in quantity, which is to change in quality, ſo ſoon as others, yet they are all diſſolvable, although ſome ſay gold is not diſſolvable; but ſure that opinion proceeds from impatience in mankinde, not to ſtay the time, or rather for want of longer time of life, having not ſo laſting a life, as to obſerve the alteration, as the diſſolution of gold, or perhaps they have not the right wayes to diſſolve it; for certainly it is as all other figures are, diſſolvable, and not fixt everlaſtingly

As if an Animal creature ſhould be pulled and dragged out of its natural garb.

ingly in one body, Chymiſts make gold as a god, unalterable.

Chap. 96. *Of the Load-ſtone.*

ME thinks 'tis ſtrange, that men ſhould wonder more at the nature of the Load-ſtone in attracting iron, and in the norths attracting of the needle touched with the Load-ſtone, then at the ſuns attracting of vapor.

I mean here the exterior nature not the interior nature.

But ſome will ſay, that it is the nature of fluiditie, of which nature vapor is one, to move with facility, and not the nature of ſolidity, of which nature iron is one, which is heavy and ſlow; but I ſay, if the attracting motion in one body be ſtronger then the contracting, and retentive motions in the other body, and thoſe figures motions work with, be advantagious; I ſee no reaſon but a fluid body may attract a ſolid body; For it is not the ſubſtance of the body that works, or produceth effects, but the agility, ſubtility, or ſtrength of motion, and advantage of the ſhape, ſo that the working power is more in motion and figure, then meerly the matter; as for example, doth not experience prove that fluid, vitral, will work through ſolid metal, the reaſon is, becauſe the expulſive motions in the vitral and ſharp points, are ſtronger then the contracting motions, in the metal and blunt edges: but ſome will ask me, why the Load-ſtone attracts onely iron? ſuch a queſtion I ask, why beauty ſhould forcibly attract the eye? they will anſwer by ſympathy; and I have heard, that it was the opinion of learned men, that ſympathy had the ſame effect, betwixt the Load-ſtone and iron, but I think it not ſo much in ſympathy, as ſupremacy.

Beſides, it is the nature of contracting motions, of which the Load-ſtone is ſtrongly inhabited withal, to work on that which is without it, as from it, not within it, or as it were upon it, which no other viſible kinde of motion doth.

And certainly the Load-ſtone is compoſed of ſharp figures, yet not of ſuch ſorts as heats or burns, and thoſe figures do iſſue out as beams do from the ſun: and as they draw the iron, they back return, and as the bright beams iſſue from the ſun, do neither weaken nor leſſen it, ſo the viſible beams that iſſue out of the Load-ſtone, neither make it leſſer or weaker; yet the beams of the Load-ſtone, do as the ſun beams, the farther they ſpread out, the leſſe ſtrength they have to draw; Beſides, if other motions which oppoſe, and are ſtronger then the natural motions, may weaken the ſtrength, as accidental maladies may weaken Animals, or ſhrewd and froward weather vegetables, or the natural conſiſting motions proper to that figure, may turn to expulſive motions, and over-power the natural attracting motions, that iſſued there-from.

But

But as I have ſaid, it ſeems the attractive power of the Load-ſtone, is ſtronger then the irons retentive power, and ſharp figures that iſſue there-from, are more advantagious then the blunt edges in the iron; and as the ſharp figures in fire unknit and looſen the contractive body of metals, making them fluid, ſo the ſharp points that iſſue in lines from the Load-ſtone faſten to iron, drawing it to it; and as fire works upon ſeveral bodies after a different manner of way, according to the nature of the body it works on, producing divers effects; ſo for all I can perceive may the Load-ſtone; for certainly we do not know, nor never can come to that knowledge, as to perceive the ſeveral effects, that are produced from the leaſt, or as we account the moſt inconſiderable creature made in nature; ſo that the Load-ſtone may work as variouſly upon ſeveral bodies, as fire, and produce as various effects, although nor to our ſenſe, nor after the ſame manner of wayes, that fire doth, and as fire works variouſly upon various bodies, ſo there are fires, as ſeveral ſorts, and thoſe ſeveral ral ſorts have ſeveral effects, yet one and the ſame kinde, but as the cauſes in nature are hid from us, ſo are moſt of the effects; but to conclude my diſcourſe, we have onely found that effect of the Load-ſtone, as to draw iron to it; but the attracting motion is in obſcurity, being inviſible to the ſenſe of man, ſo that his reaſon can onely diſcourſe, & bring probabilities, to ſtrengthen his arguments, having no perfect knowledge in that, nor in any thing elſe, beſides that knowledge we have of ſeveral things, comes as it were by chance, or by experience, for certainly all the reaſon man hath, would never have found out that one effect of the Load-ſtone, as to draw iron, had not experience or chance preſented it to us, nor the effect of the needle, and all the ages before, I mean thoſe we have Records of, were ignorant of that one effect, and perchance other ages may finde out ſome other effects produced therefrom, which theſe ages are ignorant of; And as our knowledge comes ſlow, and in parts, and pieces, ſo we know but parts and pieces of every particular thing, neither is the generality of our ſenſes capable of one and the ſame knowledge; for what one ſenſe knowes, another ſenſe is ignorant of, and queſtionleſſe there are ſome things in nature that it is impoſſible for our ſenſes to be made acquainted therewith, as being too curious for our ſenſes, but not to ſome other ſenſes; for certainly nature hath as many different ſenſes, as other works; indeed all things are wrought by ſenſitive motions, which muſt needs create a ſenſitive knowledge in every thing, and where knowledge is, reaſon is; for knowledge is reaſon, and ſenſe is knowledge; but ſenſe and reaſon work in ſeveral figures, different wayes, and not onely in different figures, but in one and the ſame figure.

Chap. 96. *Of the needle.*

I Perceive the norths attraction of the Load-ſtone is not after the ſame manner of attraction, as the Load-ſtone attracts iron, for the attractions of the Load-ſtone draws iron to it, but the attraction of the north draws the Load-ſtone towards it, by the turning it that way, as the Sun will do the the heads of ſome ſorts of flowers; For if the north attracted the Load-ſtone, as the Load-ſtone iron, the Load-ſtone would be in a perpetual motion, travelling to the north pole, unleſſe it were fixt, but I do not hear that a Load-ſtone doth remove out of the place wherein it is, but it turns, as I may ſay, the face towards it; now the queſtion will be whether the Loadſtone turns it ſelf towards the north, or the north turns by compulſion, or by ſympathy, the experiment will be by iron, that if a great quantity of iron ſhould be laid at one ſide of the needle, whether the needle would not vary from the north towards the iron, if it do, it ſhews the Load-ſtone turns it ſelf towards the north, or elſe it could not turn from the north, for certainly the north hath a greater operative power to turn the Load-ſtone to it, then the Load-ſtone could have to turn it ſelf from it, ſo if a quantity of iron can cauſe the needle to vary, it ſhews that the Load-ſtone turns to the north by a ſelf motion, and not the motions of the north that make it turn to it, but if it varies not towards the iron, then the north forces it, unleſſe the Load-ſtone takes more delight to view the norths frowning face, then to imbrace hard iron, or that the feeding appetite is ſtronger then the viewing delight; for it onely turns it ſelf to the face of the north, but if it turns not it ſelf, the north forces it to turn, which as I have ſaid before, is to be found by the experiments of iron; but if it turns it ſelf, I beleeve it may receive ſome refreſhments from thoſe raies which ſtream from the north, for all things turn with ſelf-ends; for certainly every thing hath ſelf-love, even hard ſtones, although they ſeem inſenſible, ſo the Load-ſtone may work as various effects upon ſeveral ſubjects, as fire, but by reaſon we have not ſo much experience of one as the other, the ſtrangeneſſe creates a wonder, for the old ſaying is, that ignorance is the mother of admiration, but fire which produceth greater effects by inviſible motions, yet we ſtand not at ſuch amaze as at the Load-ſtone, becauſe theſe effects are familiar unto us.

But perchance the Load-ſtone is nouriſhed by iron as many creatures are by heat, for though the creatures are nouriſhed therewith, yet the heat alters not its vertue, nor the body in which the heat inheres, loſes not the property of heating, the ſun is not weakned by warming the earth, though the earth is ſtronger by the 'warm'th of the ſun; but warm'th feeds after a ſpiri-

tual

tual manner, not a corporal, and as ſomethings are nouriſhed by warm'th, ſo others by cold, as ice, ſnow, and many other things that are above number.

So the Load-ſtone may be refreſhed, although not fed by the cold north, and as fire is fed by fuel, ſo is the vertual part of the Load-ſtone by iron, or as exerciſe gets health and ſtrength to Animal bodies, ſo doth the Load-ſtone on iron, and as idleneſſe breeds faintneſſe, or weakneſſe, ſo doth the Load-ſtone from iron.

Chap. 98. *Of ſtone.*

FIre hath more power over Metals in ſome ſenſe, then on ſtone, and in ſome ſenſe hath more power over ſtone then metals.

I mean the heavieſt metal to the hardeſt ſtone, as gold to diamonds, or tin, or lead to a ſoft ſtone

For fire will ſooner melt metal, then diſſolve ſtone, but when the exterior form of ſtone is diſſolved, it is changed from the nature of being ſtone, and be comes duſt and aſhes.

And though metal would likewiſe change the interior nature, if the exterior form were diſſolved, yet metal, although it be melted, keeps the interior nature, and exterior form, but not the exterior motions; for metal is metal ſtill, although it be melted, onely it becoms fluid, this ſheweth that fire doth not onely alter the exterior motion of ſtone, but diſſolves the exterior form, and ſo the interior nature, which in metal it doth not, unleſſe a more forcible fire be applied thereto then will ſerve to melt; which ſhewes, that although the interior motions of ſtone be contractions, as all ſolid bodies are, yet the interior, nor exterior natural figure is not circular as metals are, for ſtone cannot be made fluid, and as it were liquid as metal will be, but crumbles into duſt, and waſts, as wood or the like, and not evaporates away as water, which metal doth; This ſheweth that the exterior and interior natural form of ſtone is compoſed of parts, and not in one piece, as a circle; I do not mean in one piece, as the exterior bulk, but in one piece, in the exterior, and interior nature; For though you may pound, or file metal to duſt, that duſt as ſmall as Atoms, the like may be done to ſtone, wood, and fleſh, or any thing that is dividable, yet it will keep the nature of being metal, ſtone, wood, fleſh, or the like, although the parts be no bigger then an Atom; but if you do diſſolve the exterior nature, the interior nature doth diſſove alſo, thus the exterior form may be altered, but not diſſolved, without a total diſſolution.

Chap. 99. *Of burning.*

ALL that is hot is not of a burning faculty, nor all that is burning is not actually hot, and though Burning Motions work ſeveral wayes according to the temperament of the matter, and compoſure of the figure it meets with, yet the nature of all kinds of burnings is to expulſe by a piercing and ſubdividing faculty, provided that the burning Motions, and burning figures are ſtrong enough to incounter what oppoſeth them; but when the oppoſed bodies and motions have an advantage, either by ſtrength, or otherwayes, it alters the nature and faculty of burning, and many times there is great diſpute and long combats amongſt the ſeveral motions, and different figures, for the preheminency.

Chap. 100. *Of different burning.*

THough all that is of a burning nature, or faculty may be called fire, yet all that hath a burning nature, or faculty is not of that ſort of fire, which is a bright, ſhining, hot, glowing fire, as for example, vitrals, brimſtone, oyl, or ſpirits, or that we call cordials, or hot-waters, or any of the like nature.

Beſides all burning figures, or motions, work not after one and the ſame manner, though after one and the ſame nature, being all of a burning quality, or faculty, for ſome burn interiorly, others exteriorly, but as I have ſaid all burning, is of a ſubdividing faculty.

Chap. 101. *Fires transformation.*

THe interior, and exterior figures of hot, glowing, burning, bright, ſhining fire are all one, and the motions working apart according to the nature of the figure it works on can change every thing it hath power over, into its own likeneſſe, yet the power, and ſtrength doth alter ſomewhat according to the work, and becoms groſſer, and finer, according to the temperaments, or degrees of that which they work on: as for example, wood that is ſet on fire, or a firy coal, is a groſſer body of fire, then flaming oyl, or the like, that is ſuch a ſort of moiſt fluid matter ſet on fire, for fire takes hold, of the thinneſt parts, as well as the thickeſt; if they be ſuch thin bodies which are ſubject to take fire, for when fire is ſet to wood, it doth not onely take hold of the ſolid'ſt parts, but thoſe that are more porous, or fluid, as thoſe that riſe in ſmoak, which become a flaming body, which is a fluid fire, but there is a cold, dul, burning fire, as well as a hot, bright, burning, as all ſtrong vitrals, and this we call hot water, or

ſpirits

ſpirits, whichh ave an exterior nature to burn, or diſſolve other bodies, and an interior nature to flame, but it hath not an exterior nature to be hot, nor ſhining.

Alſo there is another ſort of fire, which onely hath an interior nature to flame, but the exterior is neither actually burning, nor hot, as ſulphur, or oyl, though oyl is nothing, but a liquid ſulphur, and ſulphur a hardened oyl.

But this cold dul fire hath not the power of transforming to its own likeneſſe, by reaſon there is ſome difference in the interiors to their exteriors, where the quick, hot, burning, bright, ſhining fire, the exterior and interior is all one, without any difference.

Chap. 102. *Of ſuch ſorts of heating Motions, as cauſe burning, melting, boiling, Evaporating and rarifying.*

BUrning, melting, boyling, and evaporating are cauſed by ſeveral motions, or ſeveral degrees or temperaments of matter.

And though burning, melting, boyling, and evaporating, are cauſed by expulſive and dilating motions, yet al dilative and expulſive motions, work not after one and the ſame manner, but according as the matter is; As for example, leather doth not burn as wood doth, yet both are diſſolved by an expulſive motion.

Beſides, ſome figures do diſſolve into flame, others moulder away into duſt, and never flame, as ſtone, and many more examples may be given, but moſt commonly all burning motions do pierce, or ſhut, or wedge, in ſharp tootht, or pointed figures; into thoſe figures they work upon, and then it diſſolves it by expulſions; for thoſe ſharp pointed figures, help motion to looſing, and unbinde thoſe parts that they finde joyned and contracted, that they may more freely ſeparate thoſe parts and diſſolve thoſe figures, which as they diſſolve the thinner parts, dilate into vapor, the lighter parts flie out into fiery points, which are thoſe we call ſparks of fire, but the groſſer, and more ſolid part moulders away into duſt and aſhes, as being too heavy and ſolid for the points to ſpread forth, they can onely as it were chew it between their ſharp teeth; for aſhes are nothing but chewed wood, yet this manner of chewing doth alter the nature from being wood, or any thing that burns after an expulſive manner, but thoſe fiery motions that onely melt, or rather thoſe figures that are not ſubject to burn, but onely to melt, is done by a ſtretching motion, for thoſe motions do as it were thruſt out the contracted parts, and cauſe them to extenuate; but when the fiery motions cauſe any thing to boyl, they firſt ſtretch out the parts ſo

far

far, as cauſeth thoſe parts to be fluid, and as it were liquid, if thoſe things were contracted, but if they be liquid and fluid of themſelves, they ſave thoſe fiery motions that labour, and when this motion ſtrives to aſcend with thoſe looſe parts, the liquor riſeth up in bubbles, or waves, but when thoſe fiery motions are over-poured by the weight, they fall back again; thus the weight of the liquor, and the ſharp points of the fire ſtrive together, one party ſtriving to aſcend, the other to deſcend, ſo that thoſe fiery motions, are to pull out, or to bear up, and the watry motion to pull, or preſſe down, but evaporating, is when the extenuating lines are ſtretcht ſo far out, as to break, or the lighter parts are carried away, and diſperſed amongſt other figures; but all rarifying heats, are cauſed by ſlow dilating motions, and not expulſions, for if ſuch ſorts of dilations as make rarifying heat, were extended beyond the line of the matter they work on, it alters the nature of the figure, and the motions of that nature; but rarifying heat is an extenuating motion, ſpreading parts equally, and evenly, but the farther they are ſpred, the more hot grows the heat, as neerer to expulſion, and though all rarifying heat is in the way of burning, yet not in the manner.

But I muſt intreat my reader to take notice, that burning motions, make uſe of burning figures, for all ſorts of motions work according to the matter and figure they work on, or in, or to.

Chap. 103. *Of quenching of fire.*

THere is ſuch Antipathy betwixt fire, and ſome ſorts of wets, as ſuch wets as are made by ſmooth extenuating circles, as they never can agree when they do perſonally meet; and indeed ſuch ſorts of wets, have ſuch power over hot, burning, bright ſhining fire, as they never incounter, but fire is in danger to be quenched out, if there be not a ſufficient quantity to break the watry circles, for it is not the coldneſſe that quenches fire, but ſuch ſorts of wetneſſe, for ſcalding water will quench out fire, and many ſorts of liquors as wine, or the like, although they be flameable, yet if they be caſt on this bright, hot, burning fire, it will quench it out, by reaſon they are more of the wet nature; then the oyly, and ſulphurous, or the burning or flaming faculty.

Tis true, that there are many liquors that are ſubject to burn, but there are few wets that have not power to quench, for the ſpherical drops do either blunt the fiery points, or diſperſe the the united body, or intangle them in the porous circles.

Thus water hath the better unleſſe the lines break in the combate, but when fire and water treat apart, or by an Attorny, or hath a body betwixt them to Moderate their

ſpleens

* ſpleens they agree better, but in this treaty moſt commonly the water becoms weak by rarification, and evaporates into air by too ſtrong, or too much extenuating, extending further then the wet compaſſe.

*As veſſels wherein water is put, and fire underneath.

Chap. 104. *Of the quenching of fire, and evaporated water.*

THe reaſon why water quenches fire, is, that the figure being ſpherical, and porous, gives diſtance and ſpace of parts, where the ſharp figures of fire, flying about to bite the circular lines aſunder, that they may ravel out that figure of water, loſe their ſtrength both in their flight and compaſſe, breaking their forces, by diſperſing their parts, and intangling their diſperſed parts in the hollow places, in the watry figure, like arrows that are ſhot into a net, ſeldom break the net, but intangle themſelves, by reaſon there is no firm ſubſtance to ſtrick on, or in; for being ſoft and ſpungy, there is no ſtop, nor hold; beſides water being wet and wet in the nature is ſticking, that when thoſe ſharp points do at any time break the lines, they joyn again, for being fluid each part moves to each other, and being wet they joyn, and being circular they unite, into the natural figure.

Thus in a plain combat water moſt commonly hath the better of fire, if there be not too much odds on the fires ſide for quantity, but when fire doth come by an undermining motion as when ſome other figures are betwixt them, then fire gets the better, by the help of thoſe undermining motions.

Chap. 105. *Of a bright-ſhining hot, glowing, fire.*

IT is the nature of bright-ſhining, hot-glowing fires, to have both an interior, and an exterior burning, and is of ſuch a kinde of ſubdividing nature, as it ſtrives to diſſolve all united parts, or bodies, and if it doth not diſſolve all bodies it works on, as we ſhall ſee many things which grow harder with fire, yet is not that the nature would not diſſolve ſuch a thing, but the power cannot, for thoſe bodies that grow harder with fire, oppoſes the power of fire, and ſtrives by contraction to unite the looſer parts, in a more ſolid body, to reſiſt with more ſtrength.

This ſort of contraction is drawing inward.

Alſo ſome bodies grow hard by ſhrinking inward, for aſſoon as they feel the fire, they draw back, as from an enemy, having an Antipathy thereunto.

Thoſe ſorts are falling backward.

Thus, it is not the fire that dries or hardens, or maks more ſolidity, but the oppoſite body that will not burn, having a ſtrength to oppoſe, or a nature not to ſubject to this fire, or the fire hath not a ſufficient power to overcome, but this ſort of fire hath a general power, though ſome bodies will ſtrongly reſiſt it; but it is the nature of this ſort of fire, that moſt bodies

The contrasting motions too ſtrong for the expulſive motions.

Yet there are but few bodies that are not overcome at last.

bodies they overcome, they first convert them into their own likeneſſe, but their natures being different, their priſoners die in the fiery arms of their enemies.

Chap. 106. *Of the drineſſe of hot, burning, bright, ſhining fire.*

DRineſſe hath ſuch a relation to hot, burning, bright, ſhining fire, as moiſtneſſe to water, for though interior motions are expulſive, yet the exterior is attractive, drawing all unto it, like a greedy appetite, and as the teeth doth mince the the food that is chewed, ſo doth the pointed figure, of fire, all it laies hold on, or enters into.

Chap. 107. *Of moiſt colds, and moiſt heats, of dry colds, and dry heats &c.*

HEat doth not make drought, for there is a temper of heat, and moiſt; nor cold doth not make drought; for there is a temper of cold, and moiſt; nor heat doth not make moiſture, for there is a temper of hot, and dry, nor cold doth not make moiſture; for there is a temper of cold, and dry, but when the motions of heat, and the motions of drought joyn, they cauſe hot and dry effects, and when the motions of cold, and the motions of drought joyn, they cauſe cold and dry effects, and when the motions of heat, and the motions of moiſture joyns, they cauſe hot and moiſt effects; and when the motions of cold, and the motions of moiſture joyn, they cauſe cold and moiſt effects, yet there are infinite varieties in their ſeveral effects; but thoſe motions which make cold and heat, I may ſimiliſe to wandring armies, of the *Gothes*, and *Vandals*, which over-run all figures, as they all the world, ſometimes they work attractive, contractive, retentive, diſguſtive, expulſive, according to the temper and degree of matter, and proportion and ſhape of the figures they meet, or according to their own power and ſtrength, and although both cold and heat, are motions that work more or leſſe upon all the figures in this world, yet cold heat works not upon figure alike, but differ as their figures differ, nor are cold and heat directly the ſame motions, although they be of the ſame kinde of motions, no more then ſeveral ſorts of beaſts kinde, yet all beaſts are of Animal kinde, and moſt commonly like ſeveral ſorts of beaſts that falleth out, or rather like two equal powerful Monarchies, that oppoſe one anothers power, and fight for preheminency, where ſometimes one gets the better, and then the other, ſometimes by ſtrength, and ſometimes by advantage, but when there is a truce, or a league, they have a common commerce, joyning their mo-

I mean the matter that made it.

tions

tions, working ſympathetically together, which produceth an equall temper.

Chap. 108. *Of the motions of cold, and heat, drouth, and Moiſture.*

COld and heat, are not wrought by different kinds of motions, but after a different manner of workings or movings, for a moiſt cold, and a moiſt heat, are but one kinde of motions, as being motions that extenuate, and enlarges from the center to the circumference; for a moiſt heat, doth thruſt, or drive outward, as toward the circumference.

A moiſt cold doth pull, or draw from the center towards the circumference. As for example, we ſhall often ſee a gardiner that rolles a green turfe walk, to thruſt the roll before him, and when he is weary with preſſing forward, he will turn his arms behinde him, and pull the roll after him.

Alſo a dry, or congealed cold, and a dry heat, are not ſeveral kindes of motions, but moves after ſeveral manners; for as moiſt cold, and heat extends, and enlarges from the center, to the circumference, ſo a dry heat, or a dry, or congealed cold, contracts from the circumference towards the center, the congealed cold in ſeveral works; a dry cold, or a dry heat onely draws into a leſſe ſpace, or compaſſe, yet the ſame difference in the manner of the motions, is between a dry heat, and a dry cold, as was between a moiſt heat, and a moſt cold; for a dry heat drives from the circumference to the center; & a dry cold draws from the circumference to the center for although al drought is from the circumference to the center, and all moiſture from the center to the circumference, yet the ſeveral manner of movings are infinite, alſo cold, and heat are not ſeveral kindes of motions, but different motions, as every man is of man-kinde, but they are different men.

And if we obſerve the effects of heat, and cold, we ſhall finde them to work after one and the ſame manner; for very ſharp colds, and great heats, paines equally; and ſharp colds deſtroy with as great & ſtrong fury, as burning heats; neither can I perceive that burning heats have ſwifter motions, then ſharp colds; for water to the quantity ſhall freez, aſſoon as any light matter ſhall burn; for water ſhall be aſſoon frozen, as ſtraw burnt, take quantity for quantity, and Animals ſhall be aſſoon frozen to death if they be touched, or ſtruck with very ſharp colds, ſuch as are neer the poles, as be burnt under the torrid Zone; as for plants, we oftener ſee them killed with cold, then heat, and I perceive there is no thaw ſo ſudden, as a froſt; for when any thing is frozen, it is not ſuddenly thawed, which half perſwades me, that cold is the quicker motion; but howſoever we perceive they do often diſpute for the maſtry, when ſome time the cold predomi-

As ſeveral men will.

as peace among neighbours and friends.

nates, and ſometimes the heat. But when there is an amity, and friendſhip between both, then it is temperate weather.

Chap. 109. *Of dry heats, and cold, and of moiſt heats and colds.*

ALL dry heats, and colds, are created, or produced by ſuch manner of motions, as pleating, folding, furfling, crumpling, knitting, linking, brading, tieing, binding into a leſſe compaſſe, or ſpace.

All moiſt heats, and moiſt colds, are created, or produced by ſuch manner of motions, as ſmoothing, planing, ſtricking, or ſtretching; but burning heats, are like thoſe motions that prick a ſheet of paper full of holes, or dart it, or cut it, but there are infinite of theſe ſeveral kinds of motions, which make theſe ſeveral heats, and colds, working according to the ſeveral degrees, or temperaments of matter, and the compoſers of figures, but I onely ſet theſe few notes to make my diſcourſe, as eaſy to my readers underſtanding as I can; for it is a difficulty to expreſſe ſeveral motions, although they be ſo groſſe as to be viſible to the optick ſenſe.

Chap. 110. *Of ſhining figures.*

I ſay apteſt, not as they do.

ALL figures that are compoſed of lines, are the apteſt to ſhine, becauſe lines are the eveneſt meaſure, and the ſmootheſt rule, for mathematical motions to work with, but according as the lines, either exterior, or interior is ſmooth or rough, contracted or extenuated, ſhines more or leſſe; for ſome lines are interiorly even, and ſmooth, and exteriorly rough and unequal, as pointed lines, or chekred, or milions the like.

Others are exteriorly even, and interiorly rough, as lines of points, ſome are interiorly rough, and exteriorly rough as lines of points pointed and ſome are interiorly ſmooth, and exteriorly ſmooth, which are drawn out even, as one piece, and not compoſed of parts.

Chap. 111. *The motions that make natural air, and day light.*

NAtural air, which is not metamorphoſed air, is made by ſuch kinde of motions, as makes cloth that is ſpun threads weaved, as with ſhuttles in a loom; ſo ſome motions ſpin threads of thin dull matter, and other motions interweave thoſe threads, where the groſſeſt ſort makes the thicker air, as great threads make courſe cloth, and the thinner

makes

matter makes the ſereneſt air, as ſmall threads make the fineſt cloths where ſome is like cobweb-lawn, ſo ſheer, or clear, as the ſmalleſt objects may be ſeen through, which is ſpread about the globe of the earth, as a thin vail over a face, or body, and from the ſun riſing, the motions that make light run in lines upon it, and ſo is like a garment laid all over with ſilver-twiſt, or rather like ſilver-wier, from the ſun riſing to high noon, it is as it were, ſetting, ſewing, or imbroidering on; this ſerene air at mid-day it is quite finiſhed, and by ſun ſet it is quite reapt off again.

And to ſhew that the lines of light are as it were laid upon this ſerene air, and not mixt into it, is by the vapor which gathers into dark clouds, which will obſcure the light, as far as they ſpread, beſides if the light were intermixt the motions and matter could not ſo eaſily, nor ſo quickly withdraw, or intermingle, as we ſee they do; for what is intermixt, is hard to ſeparate; but dark clouds are onely as ſpots, which by rarification are rubbed out, if they be wet ſpots, or drops, they fall out in ſhours of rain, but by ſuch ſorts of motions as by ringing, or ſqueeſing, or griping with a hand, or the like, which breaks the ſea, or waves of water, which are clouds, into ſeveral ſtreams of drops, ſometimes with a greater force, and ſometimes with a leſſe, according as the motions are ſtronger, or weaker.

The difference betwixt this ſerene, and natural air, and the metamorphoſed air, is as a natural face, and a mask which is put on, or put off according as the watry circles contract, or dilate; the other in probability may be as laſting as the ſun it ſelf, not being ſubject to change, but by a natural creation or diſſolution.

Chap. 112 *Of light.*

LIght is made by ſuch a kinde of motion as heat, being an equal extenuating motion, but the difference is, that the motions that make heat, is a ſpreading motion, but light is made by a ſpining motion, equally drawing out long paralel lines, with an extraordinary ſwiftneſſe, evenneſſe, ſmalneſſe, and ſtraightneſſe.

Chap. 113. *The reflections of light.*

THe reflections of light when are the innated matter draws even lines with equal motions backwards (as I may say) for when their motions are stopt, with a more solid matter, then that which they work on to make light, where touching, or beating thereon, they do not break their lines, but the leading innated matter, which makes light, returns back in equal lines, with equal motions, so as there becomes equal lines of light, onely as some lines run forward, others run backward, but in straight paralel lines, not crossed, nor perturbed; for when these motions are croſt, or perturbed, it doth as troubled waters do, the one rising in several colours, as the other in waves, so the colours are the waves, or billows of light.

Chap. 114. *Of light, and reflections.*

NO question but there are as many various lights, as faces, and as different kinds of lights, as there are different Animals, or vegetables, or minerals, as some I will here set down for distinction, the sun light, the ligh of the fixt stars, the fire light, meteor light, glow-worm light, rotten wood light, the light of fishes bones, and there are many sorts of stones which will sparkle in the dark, as diamonds, and many I cannot recount. Then there are produced lights, as day from the sun, flame from fire, then there are reflected lights, as the planets, and reflected lights from reflected lights, as the light from the planets on the earth, and infinite reflections made by several motions on figures, for on every figure are several reflections.

Chap. 115. *Of some opinions of light, darkneſſe, and Death.*

SOme say light is nothing but a motion, but there can be no motion without some matter, for where there is no matter, there is nothing to move; but light, as other effects are, is made by such kind of motions on such degrees, or tempered matter, and so is heat, and cold, and darkneſſe made by several motions, on such matter, although some opinions are, that darkneſſe is nothing but an absence of light, as some think death is a ceſſation of motion; Tis true, death is an alteration of such kinde of motions, as we call life; so darkneſſe is not made by such motions as make light, for there are motions belong to darkneſſe, as well as those to make light; for there be many several motions, in dissolving of figures, which dis-

solution-

ſolution we call death, as the creating of a figure, which we call life.

Chap. 116. *Of darkneſſe.*

THoſe motions which make darkneſſe, ſeem to be as ſwift motions, as thoſe that make light, for the air is as ſoon made dark as light; but ſome do ſay, there is no motion in darkneſſe, and that darkneſſe is a ceſſation of motion; Tis true, of ſuch kinde of motions as make light; but not of all motions, no more then the motion of the ſun makes all light, or the abſence of the ſun makes all darkneſſe; for firſt the ſun is not the onely light, for we can ſet up lights, when that is gone, by fire, whoſe flames do illuminate that part of air, that is neereſt, and could we make a fire as bigg as the ſun, and feed it perpetually, we might have a perpetual day, and the air will be as much illuminated, if there were a ſufficient fire, to inlighten ſo much air at one time, as the ſun doth; wherefore the ſun is not the monopler of ſuch kinde of motions, as make light. And can we rationally think there is no motion in darkneſſe, becauſe the motions of the ſuns light are gone from our Hemiſphear, we may as well ſay a fiſh cannot ſwim, becauſe ſuch a horſe doth not gallop, but to my fancy darkneſſe works upon the air, as well as light; for a dark cloud ſhall obſcure the light, as well as the light ſhall pierce through a dark cloud; thus darkneſſe covers many times the face of the light, which ſhewes it is not alwayes the with-drawing of light which makes darkneſs, ſince darkneſſe hath as much power over the light, as the light over darkneſſe, but obſtructed motions make darkneſſe, and hinder thoſe equal motions which make light, and thoſe motions that make miſts, and fogs, are in ſome degree like the motions which make darkneſſe, and ſo are ſuch motions as make colours, but the motions of darkneſſe ſeem to be intermixing motions, as I may ſay ſnarled motions, which intangle themſelves, and the different motions of darkneſſe, and light, are like skeines of ſilk, where the light is like thread which is pulled out even and ſtraight.

I ſpeak this as a compariſon, for I know the ſun is much bigger then the earth.

And darkneſſe is like a skein of ſilk, which is ſo inſnarled, or broken, as not any can finde a leading thread, being full of ends, knots and entercourſes.

Chap. 117. *The motions that make Darkneſſe.*

THe motions of darkneſſe upon the air, are after another manner, then thoſe of light, for as light is laid in ſuch ſmal, ſtraight, even, out-drawn lines, ſo darkneſſe is like motions of ſilk imbroidery, the work to be boſſy, full of intermixing ſtiches, and croſſe threds, knotted and purled after this manner.

And

And the reaſon I ſay ſilk, is, becauſe darkneſſe is ſofter then light, which light I ſimiliſe to ſilver, for the brightneſſe of light many times hurts the opticks, which darkneſſe doth not.

Chap. 118. *Of Shadows.*

SHadows are copies, and pictures, drawn, or printed, or ingraven by dark motions, for dark lines made by the eclipſed light, are as the pencel, or the like, the light is the paint, the ſolid body on which ſhadows are caſt, is the ground or ſubſtance to work on, motion is the artificer; for ſeveral lights are like ſo many ſeveral ſorts of paintings; for colours are but a perturbed light as ſome ſay, but to ſhew it is darkneſſe that doth pencel out, is that there would be no ſuch repreſentments, if darkneſſe were not; and too much light drowns the figure, or is as it were plaſh'd, or dabbed out, or if ſo much paint were ſpilt, or caſt on the ground without order; Yet all ſhadows are not as if they were painted, but printed in black and white, as againſt a wall, or on water, or the like, but on a looking-glaſſe, or on a piece of paper through a little hole, in a dark room, it is as painted, the colours being repreſented as well as the figures.

Chap. 119. *Of ſhadows and airie figures.*

SHadows are printed, or ingraven, or painted by thoſe motions, which make darkneſſe upon inlightned aire, but the print is not ſeen, but upon a ſolid ground, or flat, as I may ſay, which ground muſt be oppoſite to the figure it repreſents, which is after this manner, as one figure makes more, for the figure makes a figure; that is, the external motion of the external figure cuts out a figure of aire; for queſtionleſs whereſoever our bodies are, there is the figure in air; for we are alwayes encompaſt about with air, wherein we make prints of our figures; for the ſolid bodies print their figures in that which is more porous, and ſofter ſubſtance, as a ſeal on wax, or a print on butter, or the like; thus the ſolid bodies as they remove, ſtill make new prints perpetually, and infinitely, but as they remove, the prints melt out like verbal and vocal ſounds, which print words, and ſet notes in the air, and the reaſon we cannot ſee the letter in the air, as well as hear the ſound, is, that the air being ſo porous, is proper onely to convey a ſound to the ear, or to ſpread it abroad; but not ſolid enough to fix the eye thereon, having not ſubſtance to hold an object ſo long a time as to take notice thereof, unleſſe it be drawn into a ſhadow upon a ſubſtantial ground, on which the eye may fix; but until the figurative be caſt upon a ſolid ground, the figures are like ſculpture, but

when

when they are drawn in ſhadows upon a ground, it is as painting, or printing.

Chap. 120. *Of a more probable opinion to me of light making ſeveral colours.*

THe lines of light are whole and come ſo from the ſun until the light of ſuch a figure, and according to the figure, there the lines are broken, and the breaking of light according to the ſeveral figures, makes ſeveral colours, ſo it is not inherent in the thing, but in the form of the thing, which is the figure that makes ſeveral colours breaking the ſeveral lines of light ſeveral wayes, ſo the Diers of ſeveral colours by their obſervations findes it out by their practiſe, though they know not the reaſon of it, but the true reaſon is, that all thoſe ſeveral dies make ſeveral figures, which ſeveral figures breake the lines of light ſeveral wayes, which being broken ſeveral wayes produce all thoſe ſeveral colours.

To ſhew you that it is ſeveral figure that breaks the lines of light that make ſeveral colours, you may ſee it in a pigions neck and breſt, how many various colours it will change into, with and in the ſame place, the lines of light being broken ſeveral wayes by the pigions feathers, that make ſeveral figures, as alſo you may perceive in Rain-bows, the ſun ſhining upon a watry cloud, the cloud being between you, and the ſun what various colours there are, ſo to ſpout water out of your mouth, if it be between me and the ſun, it makes the ſame colours, and all this is nothing elſe, but that the lines of light are broken ſo many wayes, by the ſeveral forms and figures it ſhines of, which produceth the multiplicity of all thoſe various colours.

Again, more plainly to make it appear, that there can be no more truth but this in colour, take a triangular glaſſe it is all of one colour, and was never ſent to the diers, and look in it, and you ſhall ſee the moſt various colours in the world, the colours are not in the glaſſe, therefore with rational man it ſuffers no diſpute at all, that colour is nothing elſe, but the lines of light broken by ſeveral forms, and figures, that produceth all the various colours that are in the world. And for excellent diſputants, that make *Ariſtotle* their church of reaſon, that cannot erre, and will maintain his nonſenſe againſt reaſon, I leave them to their ignorance, and wiſh they would rather follow his Logick, and his Rhetorick, then his natural Philoſophy, for their own ſakes.

Chap. 121. *Of Colours.*

SOme ſay colours are made by perturbed or obſtructed light, but in my opinion, colours are broken lines of light; for when light is obſtructed as being ſtopped it reflects with double light, thoſe lines returning back [illegible] double ſtrings, and if it were perturbed light, [illegible] over-agitated air, or troubled and rough waters, the light would be onely thicker, and mudier, having not liberty to move in ſo level, even, and ſtraight, paralel lines; it is true, thoſe perturbed motions may be the cauſe many times of breaking the light, which broken parts contracting into ſeveral figures, or works, cauſeth ſeveral colours, every particular work, being a ſeveral colour, and when theſe ſeveral figurative works are mixt, being part of one work, and part of another, the colors are alſo mixt.

For the ſeveral works made of the pieces of light, are that which makes ſeveral colours, and not the pieces of light without thoſe works, for if thoſe pieces of light lay ſcattered and not contracted into ſeveral figurative workes, they could, or would not make colours, but if colours are not made by pieces of light, they are made by contracting the ſtraight unbroken lines of light, which contraction turns light into colours, as contractions do water into ſnow, ice, hail, froſt; Now it is to be obſerved, that it is not onely the contracted motions on the water that make the difference, but being contracted into ſuch or ſuch a figure; for whenſoever water is contracted into ſuch a manner of figure, it is ſnow, if into ſuch a figure it is hail, if in ſuch a figure it is ice, into ſuch a figure froſt, and may do ſo conſtantly, and eternally, and ſo when light is contracted into ſuch a figure, it is red, when into ſuch a figure, blue, into ſuch a figure, yellow, into ſuch a figure green, and when it is contracted partly into the figure of red, and partly into the figure of blue, it makes a figure of purple, and if it be contracted partly into the figure of red, and partly into the figure of blue, and partly into the figure of purple, it makes a fourth figure, which is a fourth colour, and ſo a fift, and ſo infinites, likewiſe one and the ſame figure which is one perfect colour, may vary with each patticular figure, which is each particular colour, and upon what body ſoever theſe figures are printed, they take colours, and according as the figures differ, the colours are changed, or alter; for it is not the body that they are printed on, or the reflections of light, caſt upon ſuch bodies that make colours, but ſuch figures made by contracted lines of light, which figurative works give ſuch colours to any thing they can print, or place on, but the reaſon why I think they are rather broken pieces of light contracted, then contracted ſtreight lines, is, becauſe they are ſo laſting, for though ſome colours will fade

ſooner

ſooner, yet ſome will laſt a long time; for whatſoever work is wrought with parts, as I may ſay, ſeveral pieces of thread, is not ſo apt to undo or ravel out, as that which is but of one piece, unleſſe the thread were circular, without ends, but lines of light are paralels, and not circles, as for ſhadows of colours, in my opinion they are produced after this manner, as I ſaid, the figure of blue or the like, which is one perfect colour, and the figure of red which is another perfect colour makes a third figure, which is a mixt colour, likewiſe blue and yellow makes a different figure, which is a different colour from blue and red, and blue and yellow, makes a different figure, which is a different colour from blue and green, & ſo we may match figures until we be weary, but whatſoever hath conſtantly part of one and the ſame figure, in the ſeveral or ſingle compartments of other figures, which are other colours, as blue and green, blue and red, blue and yellow; and the like appears in ſhadows, by reaſon one particular figure, or figurative part is the ground-work, which is, the ground colour, which makes all the colours it mixes with, partly of its own complection, and according as there are more or leſſe, of that figure, the ſhadow is fainter or ſtronger, and according as the contractions are more or leſſe, the colours are deeper, or paler; for thoſe figures that are cloſer contracted, and rougher wrought, are the darkeſt colours, as neereſt to black, and thoſe figures that are looſeſt, contracted, and finer wrought, ars the the lighteſt, or paleſt colours, as being moſt light, when the parts are looſeſt, and moſt at liberty, and the brighteſt, as the moſt glorious colours that are made of the pureſt, and cleareſt light, which is of the ſmalleſt lines of light, as I may ſay, the fineſt threaded light, for ſome lights are thicker then others, by reaſon their lines are groſſer.

Alſo colours which are broken contracted lines of light, may appear darker, or brighter according to the reflection, of other lights, or rather according to the ſtraight and unbroken lines of light are that caſt upon them, likewiſe ſome light doth alter the colours that are made by other lights, as ſome colours appear not by candle-light as by day-light, and the reaſon is, that ſeveral lines of ſeveral lights, being groſſer, or finer, cauſeth the colour to appear duller or brighter, and ſome particular lights make ſome colours appear more then others, and ſome particular lights obſcure ſome particular colours more then others, according as they are further, or neerer off the nature of each other; for though the ſeveral figurative works make the ſeveral colours, yet it is the lines and pieces of light, that make thoſe figures and works.

Chap. 122. *Of airy figures.*

AS I ſaid before, the ſolid bodies moving in the ſoft, & more porous bodies, make many figures therein, ſome as printed, ſome as painted, others as ſculpture, as cut, or carved in wood, or ſtone, or caſt in metal, or moulded in earth, ſome are as if a man, or the like creature ſhould print themſelves in ſnow, others as if they ſhould make themſelves in ſnow, as for example; as if a man ſhould ſtand, and let the ſnow fall thick upon him until he were all covered over, there would be his figure in ſnow, or if he ſhould lie down in ſnow, there would be his print; ſo it is in air, as we move from place to place, new figures are made, and the former figures moulder, or melt out, but according as the air is, ſo they laſt, or decay, for if the air be congealed with cold, thickned with groſſe fogs or miſt, the figures laſt the longer therein, although in a miſhapen poſture, like ruinated buildings, or broken ſtatues, or like defeated armies, here an arm, or a piece of an arm, or a hand, and there leggs, here a head, there a mangled body; but when the air is thin, and ſerene, the print diſſolves aſſoon as the figure removes; and if the air were as ſolid as ſnow, we ſhould ſee the figures as perfect in the one, as in the other; but the air being very thin, and porous, the ſight of the eye runs thorow without ſtay, or ſtop, taking no notice, like water in a ſieve, wherein nought can be contained, becauſe there is no hold to keep the water in from running out.

Chap. 123. *Of External figures, and internal forms.*

IN ſome things there is ſuch ſympathy betwixt the internal form, and the external figure, as the alterations of the one, change the nature of the other; as for fire, when the external figure is altered, the internal faculty is gone, here the internal nature depends upon the exterior figure; but as for water, the external figure may be changed, as we ſee when it is frozen, but the internal nature not changed, for it is as water ſtill, though it be not fluid, here the internal depends not upon the external; but thus much the exterior figures of all things depend ſo ſo much upon the exterior form, or nature, that when the internal is changed, the exterior cannot be altered, from and to, as to change the countenance or face, as I may ſay by contraction, and dilation, as water, and metals, and many others, but an animal figure may remain, as it was for a time, when the internal is changed, but not long, as for example, Animals, although the internal nature, and faculty be changed, which is to move after ſuch a manner, as is proper for Animal, the external figure is not altered: for when Animals are dead, the external, which is the outward ſhape remains

As we ſay dead.

remains perfect, for a time, yet the internal motions may be in diſorder, as they are in animals that ſound, or are ſick or faint, or in vegetables that are fading, or drooping; but when the internal motions move orderly again, either of themſelves, or by the help of aſſiſtant motions, and figures, the Animal is as it was before, and the Vegetable flouriſheth green again, thus there may be an alteration; but when there is an abſolute change in the internal, there can be no return, but by a new creation, for all alterations of motions do not do it, but a total change.

Chap. 124. *Earth, water, air, fire, cold, heat, light, darkneſſe.*

EArth, water, air, fire, cold, heat, light, darkneſſe, is made as Animals, Vegetables, and Minerals, that is, that ſuch degrees of innated matter works upon the dull part of matter with various motions, and ſeveral degrees, of dull matter produceth ſuch effects joyning parts together, and ſeparating parts aſunder, but joyning, and mixing each degree together, loſeth not the entity of each degree, for that can never be altered, for as it was from all eternity, ſo it will laſt to all eternity.

Chap. 125. *The motions of the Sun, and Planets.*

THe Sun, and the reſt of the Planets, are queſtionleſſe created as other Animal creatures, and their local motions are according to the ſhape, as we ſee all Animals are, for a worm cannot run, but onely moves by gathering up the body from one place, and then ſtretching it ſelf out farther, or elſe by rolling, and winding his body from place to place, nor beaſts cannot flee as birds, nor birds cannot trot, amble, nor gallop, as beaſts, becauſe they have no ſhape fitted thereto; for birds want four leggs to pace and gallop, and beaſts want wings to flee, ſo the Planets move acccording to their ſhape, turning about as a ſpherical circle about a center, and if the ſun runs about the world with ſuch ſpeed (as ſome old opinions are, it muſt turn as a wheel about the ſpoake, or rundle as a bowl in the ecliptick line.

I think them to be Animals.

But if the ſun, as ſome Modern opinions hold, doth not move out of his place, but is as it were fixed, and that the Planets move about it, in circular wayes according to their ſhape, then the motions of the ſun, are onely by dilation, and attractions: from which light, and heat proceeds, and vapor is drawn or ſuckt up.

Chap. 126. *Of the motions and figures of the four natural Elements.*

I ſay natural, becauſe there are metamorphoſed elements.

THe motions that make the natural figure of earth, are not ſo curious, nor the matter they work on ſo fine, as thoſe which make fire, air, and water; for the materials being groſſer, their work is rougher, like morter that is made of hair, and lime, and the motions moving not ſo evenly, or diſtinctly, but rather mixtly, cauſeth it to be ſad and dark, the ſolidity, weight, and drought are cauſed by the contracting, attracting, and retentive motions, which motions are the chief workers and creators of this element, which work like ants, drawing all thereto, making it like a round heap, or like a Load-ſtone, that attracts the ſolid matter.

The ſlimie or gelly part of the earth is made by ſuch kinde of motions as ſpin ſmall lines lik Silk-worms, in a round hollow ball; water is made after that manner, onely thoſe lines extenuate more into perfect circles.

Natural and pure air is made by ſuch a kinde of motion, as ſpiders ſpin webs, ſmal lines ſpread, and enterwoven evenly.

Natural fire is made by ſuch kinde of motions, as the art of whetting, or ſharpening, or pointing with a grind-ſtone, or Load-ſtone or the like, and is made like the ſtings of Bees, which pierce, and wound whatſoever they can enter.

Natural light is made by ſuch kinde of motions, as wier-drawing, or drawing a ſmall thread from a ſpindle.

Natural darkneſſe is made by ſuch kinde of motions, as winding up threads upon bottoms, in a heap.

I ſay natural, becauſe they keep their original form, and is the right kinde, and true ſhape, as I may ſay of man-kinde; For if a creature ſhould be partly a beaſt, and partly a man, it were not of the right kinde, and true ſhape.

Likewiſe Elements may be of the right kinde, and yet be different as mankinde, for every particular man is not alike, neither in ſhape nor quality, the like may elements differ.

Chap. 127. *The reaſon of the ebbing and flowing of the ſea thus.*

I Will not diſpute, according to *Copernicus*, that the earth goes about, & the Sun ſtands ſtil, upon which ground *Galleleo* ſaith, the reaſon of the ebbing and flowing of the ſea, is the jogging of the earth, the old opinion is, that the moon is the cauſe of it, which I can hardly beleeve, for mark the tide from *Scotland* to *Margel* when the moon hath the ſame influence, and the tide is ſo many hours in coming from *Scotland* to *Margell*

as

as if one rid poſt, if it were the moon, why ſhould it not be high water, or full tide *Margell*, that it is in *Scotland* at the time, the power of the moon being all one, ſo that comes very improbable to me, for many things fall out at the ſame time, and yet the one not cauſe of the other, and in Philoſophy there is nothing ſo ordinary, as to miſtake the cauſe of things, ſince indeed the things for the moſt part are hid from us; ſome again will have the Sun the cauſe of the ebbing and flowing of the ſea, others rationally ſay, heat makes motion, and the ſeas being ſalt make motion, becauſe it is hot, but how comes it that the freſh waters ebbe and flow? even ſprings well, whatſoever the cauſe be of the ſeas motion where it moves, ; for in ſome places they ſay it doth not, but where it moves it is never high water in one place, but it is low water in another place, and the ſea moves alwayes circularly, for as it is the nature of water to be made in figures of circular lines, ſo it is the nature to flow circularly, which in my opinion is the reaſon of the ebbing and flowing tides, that moves circularly, that is, part of a circular, where the convex flows ſtill forward, the flowing motion extends more and more, cauſing it to ſwell out, and the concave ends to extend longer and cloſer, in ſo much as at laſt the concave ends are joyned into a convex, for it doth not extend in a perfect round circle, as I ſhall deſcribe in my following diſcourſe, but after an oval, or rather a pear figure, but when the flowing convex is extended beyond the ſtrength, it ſtraight breaks, being moſt weak, by reaſon it is moſt extended out, ſo that when the tides have no more ſtrength to flow for want of water to extend, and the convex over-powred by extenuation, it breaks aſunder, and ſo falls back, whereby the convex parts are now become the concave, and where it was concave, is now become convex, which cauſeth it to flow the other way, and ebb where it did flow, for where it lies concave it ebbs, and where it is conex is flows, and thus it ebbs and flows perpetually, where it hath free paſſage, but the farther it flows, the weaker it becoms, by reaſon the ſtrength is abated, like a horſe that hath run faſt and far, at laſt is ſo weak and breathleſſe as he falls down, ſo when the convex can extend no farther, it breaks in two, but as the convex extends, the concave ends draw cloſer together, whereby ſuch time as they come to joyn, the convex is ſo bowingly ſtretched, as it becomes brittle, as I may ſay or weak, which cauſeth it to break, but it is to be obſerved that the tides have a double motion, for as the convex flows forward, the concave ends draw backward at one and the ſame time, for the extenuation of convex one way, cauſeth the extenuation of the concave ends the other way; but by reaſon the two ends draws cloſe towards a point, the ebbing waters ſeem narrow and little, but the ebbing tides are but an effect of the flowing

If one powers water on the ground it flows with a Convex.

In a pear figure.

flowing tides, not a cauſe in it ſelf, for the interior nature of water is to flow where it can get liberty, and freedom of paſſage, and where it doth not flow it is obſtructed by ſome obſcure cauſe, but I deſire my reader not to miſtake me, as to conceive the motions of the tides, and the interior nature of water all one, being ſomething alike; but the motions of the tides, and the motions of the interior nature of water are as different as the local motions of Animals, and their interior nature, and I beleeve if the freſh waters had the ſame liberty as the ſea waters, to flow which way they would without oppoſition, or obſtructions of hils, dales, banks and walls, and had the like quantity to move withal, I beleeve they would as naturally flow as the ſea, and ebbe when their ſtrength fails, and I beleeve if there were a ſufficient quantity of water in the ſea, and no obſtructions, as Iſlands, creeks, and the like to hinder the paſſage, and that the earth were like a billiard ball, it would flow perpetually round, as the Globe turns upon the Pole, if the Pole turns not round with the Globe.

Chap. 128. *Deſcribing the tides.*

THe flowing water gathers up together like ſuperflous humors, and ſwells out the convex, as corrupted matter doth the skin, and never leaves extending till it breaks, but it begins by degrees in a demy-circle, and as it flows it grows larger, and longer extending its compaſſe.

And as the convex extends, the concave ends muſt of neceſſity draw cloſer together.

Which makes the ebbing waters like a tail to the convex, which as the body, which makes the ebbing waters to be narrow, and by the reaſon the bulk of the water flows in the convex, it cauſeth the concave ends to be ſmall, which makes it ſhallow, and the more the concave ends extend, the ſmaller they are, like thread drawn from a full diſtaff of flax; for ſo the concave ends draws, or rather extends from the convex body; But as I ſaid before the more the convex extends, the cloſer the concave ends draw together, and when the convex is extended to the uttermoſt they joyn.

And aſſoon as ever they are joyned and mixt together into one point, as it were, it ſwels into a body.

For the former convex being broke, the waters fal back to that part which was the concave, but now is become the convex, and that part which was the convex, is now become the concave.

Yet the convex muſt be full before the concave ends extend, like as a glaſſe that muſt be filled above the brims before it can run over.

Chap.

Chap. 229. *Of double tides.*

AN after, or double tide is cauſed by winde, like as a man ſhould walk againſt a very great winde, that although he preſſeth forward, yet it drives him back; but when he hath broken the guſt as it were, he paſſeth more forcible through, and though winde have power over the exterior motions of the waters, yet not on the interior motions, but winde can diſcompoſe the face of the waters, as anger doth the countenance of men.

Chap. 130. *Of ſpring Tides.*

SPring tides I conceive to be cauſed by waters that iſſue forth from the veins of the earth, which are apt to ſwell, and then to vent themſelves forth at certain times, as natural iſſues, which flowing cauſeth the tides to be greater, becauſe it hath more ſtrength to extend farther, and the tides to be higher becauſe the convex is thicker, and fuller, for the greater body of water, the farther it flowes; for it is for want of ſtrength which makes an ebb, or want of paſſage which makes a ſtop, and when the tides are lower, there are ſome inviſible obſtructions, or the earth hath drawn or ſuckt from that part of the ſea.

Chap. 131. *The tide and ſtream flowing againſt each other.*

THe reaſon the tide flows againſt the ſtream a of River, is, that the quantity of ſea water forceth through the ſtream, and the deſcent of the river forceth the ſtream to paſſe through the motion, or rather by the motion of the tide, for the natural motions of all waters being to flow, and the force of the deſcent added therto, gives it a double, if not a treble ſtrength, ſo that when the force of the tide, and the force of the ſtream meets, and incounters, they make paſſes, as Duellers that fight hand to hand; but if one water runs quite through another, it is moſt probable that the tide runs through the ſtream, by reaſon it is armed ſtrongly with ſalt, which may cauſe it to be ſtream-proof, when the river water is porous, and weak by reaſon it is freſh, and thin as I may ſay.

Chap. 132. *The difference of ſalt water and freſh water.*

THe difference of ſalt water and freſh, is, that ſalt waters circle lines are flat, and edged, as a knife, or the like, and in freſh water, round, which edge makes it not leſſe ſmooth, although more ſharp, nor hinders the extenuating compaſſe, but the lines being flat, make it more ſolid, and ſo give it more ſtrength, then the freſh water circle that is round, which makes it more porous, then ſalt water, is, by the experience of an egge, and the like, which in freſh water the egge will ſink to the bottom, but very ſalt water will bear it up, from ſinking, and according to the ſtrength, it will bear more or leſſe, but thoſe lines may exteriorly alter, from flat to round, and round to flat, and never alter the interiour nature, as to break the compaſſe, which is to diſſolve the circle or ring (as I may ſay) which circle ring is the interior figure.

Chap. 133. *Of winde.*

WInde is wrought by expulſive motions, and the ſtrength doth not proceed from the thickneſſe, or ſolidity of the body, as many think it doth, conceiving it to be contracted, or preſt up air, which if it were, it could not enter into ſuch ſmall porous, and narrow paſſages as it doth; wherefore me thinks the ſtrength ſhould not proceed ſo much from the ſolidity, as the agilneſſe therein; for the quick repetition doth ſo forcibly preſſe on each other, as upon neceſſity it muſt drive all looſe, and porous bodies before it, but the farther it bloweth, the fainter is the breadth, for as the repetitions grow ſhort, ſo weaker.

Chap. 134 *Of the noiſe of Tempeſt and ſtorms.*

AS I have ſaid, that ſort of air which is made by watry circles is apt to ſound with every motion that ſtrikes thereon, by reaſon of the hollow figure being ſpherical.

Likewiſe this is the reaſon running brooks make a murmuring noiſe; alſo this is the reaſon, that the tides do make ſuch a noiſe in the ebbs, and flowes, circles preſſing, or rather ſtrikeing each other.

Again, this is the reaſon the windes, when they blow upon airy, or watry circles, by ſtriking thoſe ſpherical circles, cauſe it to ſound, and make a roaring noiſe, by the confuſion it makes therein; for winde which is an expulſive vapor doth not onely ſtrike thoſe watry circles, but thoſe that are extended into air, and when thoſe motions drive circle againſt

circle

circle, or circle upon circle, makes ſuch quick rebound, which rebounds in contracting and croſſing each other, make a confuſed ſound, which we call tempeſtuous and ſtormy, and it is to be obſerved, that a tempeſt in the air, and a ſtorm in the water, and thunder, is much after one and the ſame kinde of noiſe; But as thunder is cauſed by the expulſion of the moſt extended circular lines, ſo winde is the expulſion of the more groſſer circles, as when lines break, which are extended no farther then to vapor, alſo theſe expulſions, if they be not very violent, cauſe rain; for the expulſed motion being no ſtronger then to preſſe upon the unbroken and extended circles, either of vapor, or air, drives it into the watry compaſſe, but when the weather is cloudy, it is not altogether ſo hard preſt upon, as to drive it into perfect water circles, but to the next degree, as a thick vapor.

And when the weather is unconſtant, as we ſay, that is ſometimes groſſe and thick, and then it will be ſtrait clear, and bright, is as the preſſer doth abate, or increaſe; but unforced raines (as I may call them) which is without a violent conſtraint, is when thoſe circles are drawn into a wetry compaſſe in a natural order, and by the natural waight, being thicker then natural air, that is original air, and not tranſmigrated water, it falls down on the earth.

Likewiſe the pouring ſhowers make a ſound, by the force of the falling drops, ſtriking as they fall, ſound; but by reaſon the water is divided, by the falling motions into leſſe bodies, as it were, which makes not ſo ſtrong a ſound, having leſſe compaſſe as the tides, or air having fewer circles in a body, as in drops, which makes it of a leſſe bulk, and the leſſe the body is, the weaker, and the ſmaller is the ſound.

But when the watry lines are drawn into a triangular figure of ſnow, it falls ſilently without ſound, by reaſon the watry line is drawn out of the extended circle. Beſides, that figure is the lighteſt figure, by reaſon of the inequality, for a ſquare hath four equal parts, which makes a juſt number, ſo an equal ballance which gives it a ſteddy weight, and a circle is equally round, without parts, which gives a ſteddy weight.

But a triangular figure is in three parts, which is no juſt number, nor equal ballance, nor ſteddy weight, which make it of leſſe force, for being a wavering figure, it cannot preſſe hard, nor ſtrike ſtrongly, nor fall heavy, but flies lightly about.

Chap. 135. *Of thunder and lightning.*

THunder and lightning are cauſed from watry circles, for when they are extended from water to vapor, from vapor to air, from temperate air, to hot air, from hot air to fire; for if thoſe circles extended beyond the compaſſe, and ſtrength of the line, they break, which is the cauſe of thunder, and lightning; for aſſoon as the fartheſt extention of the circle is broken, thoſe extended parts do with an extraordinary ſwift motion run, or rather ſhut forth into bright flaming flaſhes, as ſpinning lines of light; but when thoſe lines extend with a ſtrong ſtrength, they break into ſmal parts, which cauſeth thunder to follow lightnings; for thoſe breaking parts ſometimes expulſe diſorderly, beating and ſtriking upon thoſe circle lines that are unbroke, which circles being of a hollow figure, cauſe a ſound in the higher region, whereto they are aſcended, for their extention cauſeth them to be light, their lightneſſe to aſcend; But all hollow figures being concave within, and convex without, do preſent to the ear, if they be ſtrong, as concave, and convex glaſſes doth objects, when preſented to the eye; thus hollow figures cauſe a hollow ſound if they be ſtruck, for the concave draws thoſe motions in which rebounds from ſide to ſide, and the rebounds continue the ſound by the Echos repeated, for ſound laſts longer in hollow figures, then in any other, and though I will not ſay that onely hollow figures make ſounds, yet I ſay that no ſound can enter but through hollow figures, as the ear is a hollow figure, and all hollow figures, and the ear is not onely hollow, but circular, but ſounds are made in the ear, or rather enters, as light and colours in the eyes, for diſcord is perturbed motion, or rather cloſe Antipathetical motions, and harmony are ſympathetical, and regular motions, but the more of theſe extenuating circles break, the more lightning there is, and the ſtronger they brea, the more thunder there is, and the harder they ſtrike upon the unbroken circles the lowder is the ſound.

See my chapter of Fame

Sound enters into all hollow places, as well as into the Animal ear.

But if the circle lines break onely aſunder, and extend, or ſhut forth into ſtraight lines without more parts, there is onely lightning without thunder, but if thoſe lines break into more parts, there is thunder alſo, and when there falls rain at thoſe times of thunder, it is when the gentler motions of ſome of thoſe expulſed parts, do not ſtrike hard upon ſome of thoſe unbroken circles, but preſſe upon them, which cauſeth them to draw, and gather into a leſſe circle, and a groſſer line, untill they return into the watry compaſſe, where growing too heavy for the hight, falls down toward the center of the earth, as all heavie bodies, if not thick bodies under to bear them up, or ſtronger motions then their weight to hold them up.

up, thus in my opinion is thunder and lightning cauſed, and when it rains, thoſe unbroken circles return into its nature again.

Chap. 136. *Of the alterations of motions.*

ONe and the ſame degree of innate matter may change, and rechange the natural poſture motion in one and the ſame figure, but a general alteration of thoſe motions proper to that figure, diſſolves the natural form of any one particular figure, for a figure moving by ſeveral motions, proper to its kinde, muſt joyntly conſent either by a ſympathy, or inforcement to make a diſſolution, as well as a creation, but all motions works or alter according as the matter is, or figure they work to, or forced by ſtronger motions to alter their natural courſe; likewiſe ſeveral and contrary motions may work by turns in one and the ſame figure, by one and the ſame degree of innated matter.

I call thoſe natural that are proper to the figure.

Chap. 137. *Of different motions.*

ALL extenuating motions make not fluidity or wet, but ſuch kind of extenuating on ſuch tempered, or on ſuch degrees of dull part of matter, for ſome extenuating motions make light, others make heat, and infinite the like, ſo all expulſive motions do not burn, nor all contracted motions do not work alike, nor all attractive, nor all retentive, nor expulſive; for there are infinite wayes or kindes of them, which works infinite varieties, for there are infinite ſeveral ſorts of heats, coldes, droughts, moiſtures (and infinite kindes of lights and darkneſſe as well as of colours, ſo infinite wayes of contractions, and attractions, and infinite wayes of expulſions, and ſo there are ſuch varieties in one and the ſame kinde, as it is impoſſible for me to deſcribe, as for one man to draw the ſeveral pictures of mankinde from all eternity; but if I could draw but one picture, it will be enough to ſhew my art and skill, although but a plain draught, but I finde the work too hard for my wit, yet I have ventured, and mean to hang it on the wall of cenſure, although I know ſpite will ſtrive to pull it down.

Feathers, wool hair, and the like, which are neither liquid, fluid, nor wet, onely ſoft and ſympathy

Chap. 138. *Of the local motions of water, air, and fire.*

I perceive there be other figures that have local motions beſides Animals, yet it is partly their figures that are proper thereto; for though there is no matter, but is figured, yet all figures move not but of themſelves, and though all figures are moved, or moving, or both moved and moving, yet all local

motions move not after one and the ſame manner; but I hear mean by local motion, that which naturally can move from place to place, by their interior nature, and exterior ſhape, but if the word is not right to the ſenſe, pray pardon it, and take the ſenſe and leave the word, and Chriſten it a new; but theſe kindes of local figures are water, arie, and fire, which move after an Animal manner, although they have not the ſhape of thoſe we cal Animals, yet they ſeem Animals by their ſelf motion, as moving from place to place, unleſſe they be ſtopt by ſtronger motions, or other figures that are more powerful: the like of other Animals, as for example, if one man, or more being ſtronger bindes another man which hath not ſtrength, nor power to oppoſe, or hinder them, he cannot move according to the property of his nature and ſhape.

All animals are not of one ſhape.

So likewiſe, if cold contractions be more powerful then the extenuating circles, it bindes up the the water with icie fetters, wherby it cannot move according to the nature, nor circular ſhape; ſo if any man ſhould go to a place, and a high wall ſhould ſtand betwixt him and that place, he cannot paſſe unleſſe there were a paſſage, or that he can clamber, which muſt be by art, becauſe there is no footing, and to jump over it he cannot, for it is ſo high that the weight of his body will pull him down, before the ſtrength or agilneſſe of his limbs ſhall raiſe him over, and he cannot flee over by reaſon his ſhape is not fitted thereto, having no wings, ſo water being ſtopt, and the paſſage hindered, by a thick bank of earth, cannot move according to its property; for it is proper for water to move deſcendingly, at leaſt ſtraight forth; but when it aſcends, it is forced by other more powerful motions, ſo likewiſe it is proper for air to move after a level, ſtreaming, or ſpreading manner.

And as a man may pick a hole through the wall, ſo water will pick a paſſage through the earth.

For fire to aſcend, after a piercing, ſhooting, and perpendicular manner, for theſe elements do as other Animals do, for man, beaſts, birds, fiſhes, their local motions are different according to their ſhapes, for it is the property of a four legged creature to gallop, trot, pace, run, leap, but they cannot flee, becauſe their ſhape is not fitted thereto, having not wings, nor a bird cannot gallop, trot, nor pace, having not four leggs to make changes therewith, it is true, a two legged creature may leap, jump, hop, and run.

I mean all exterior motions.

Likewiſe thoſe fiſhes can neither run nor flee, that have not wings nor legs; but thoſe that have mixt ſhapes, have mixt local motions, as there be fleeing fiſhes, and ſwimming birds, and running fiſhes, and ſwimming beaſts, indeed moſt creatures can ſwim, for moſt ſhapes are fitted thereto in one kinde or another, but mans ſhape is ſuch as it can imitate moſt various motions, though it is the ſhape that makes al creatures to move different ly, yet it is not altogether the ſhape that makes them move locally, but there muſt be ſuch an interior nature proper to ſuch

ſhapes

ſhapes, as Vegetables and Minerals, their property is not to move locally, that is, to have a ſelf exterior motion.

It ſeems their interior nature, and exterior ſhape is not proper thereto, or perchance it is only their exterior ſhape, and not their interior nature that makes them unfit to move ſo, for we finde their interior nature to be more active then many of the exterior ſhapes of Animals. But to return to thoſe elements I treat of, as firſt water, the interior nature cauſes it to be liquid and wet, the exterior ſhape to be fluid, both agreeing by a ſympathetical conjunction give a local motion to deſcend, and bear all before it, or with it, that is looſe, and unfixt, ſo fire, the interior nature cauſeth it to be hot and dry, the exterior figure to be ſharp to burn, both agreeing by a ſympathetical conjuncting, giving it a local motion to pierce and divide it, all it can enter into, if not over-powred; ſo air, the interior nature cauſeth it to be ſoft, and pliant, and the exterior figure to be thin and ſearching, both agreeing by a ſympathetical conjunction, gives it a local motion to enter through all porous bodies in a level line, and to fill up all vacant places in other figures, unleſſe it be thruſt out, and kept out by ſomething more powerful; It is the natural property for fire to be hot and dry, to be ſharp and burning, to move aſcending.

And for water to be liquid, fluid, and wet, and to deſcend in a deſcending line.

And air to be ſoft, and yeelding, to be thin and ſearching, to move in a level line, unleſſe they be forc'd otherwaies, for fire may be ſuppreſt downward, and water forc'd upwards and air diſperſt, and fire is not onely ſubject to be ſuppreſt, but quenched out for water, if there be a ſufficient quantity to the fire on which it is caſt, will over power it; for the innated motions which cauſe water to be wet, deſtroy the motions that cauſe fire to be ſharp and burning, and the figure being deſtroyed, that is diſuniting thoſe parts, and thoſe motions, that keep and maintain thoſe parts in that figure, the property is extinguiſhed too, as we ſee many Animal figures, do to one another, and birds, and fiſh, and men, deſtroy beaſt, birds, and fiſh, according as they have ſtrength, power and advantage, for indeed the diſſolution of one figure is the cauſe of the creation of another, ſometimes the materials of one figure, make many figures, and ſometimes the materials of many figures make but one figure; and an Animal figure hath many ſeveral manners of moving locally, and the elements as other Animals do move ſomtimes ſlower, and ſometimes faſter.

Chap.

Chap. 139. *Explanations of onely Matter.*

IT is to be obſerved by thoſe figures that are wrought by the way of lines, are ſoft, ſmooth, and ſhining, whether they be paralel lines, cupe lines, triangular lines, or circular lines, but the ſmaller, and ſtraighter the lines are, the ſmoother, and brighter is their work, but there are ſeveral ſorts of ſoftneſſe, and ſeveral ſorts of ſmoothneſſe which are made by ſeveral kindes of motions.

Then it is to be obſerved, that all works of contractions, and retentions are ſtronger, and more laſting, then thoſe figures that are more light, and porous, or extenuating.

Thirdly, it is to be obſerved, that the innated matter, which works upon the light, and thin part of dull matter, is more agil, and nimbler then that which works upon the thick and ſolid matter, unleſſe the ſtrength of the motions be not above, or at leaſt equal to the ſolidity of the matter.

Alſo it is to be obſerved, they can make ſolid figures of light thine matter, by their cloſe, and curious joynings injectures, and mixtures, and porous, and light figures of ſolid matter, by their dividings, and ſpreadings, but though the innated matter can contract and dilate, the thick, or thin, light, or heavie fluid or ſoft, yet it cannot alter the nature, or degrees of the dull part of matter, neither can the innated matter make it ſelf weaker, or ſtronger then by nature it is, for the entity of onely matter cannot be changed, but though the nature cannot be altered of dull part of matter, yet it may be cut, and carved, and joyned and diſperſed into ſeveral figures, ſo the innated matter, although the nature cannot be altered as to make each degree weaker, or ſtronger, yet they may move ſwifter, or ſlower, according as the dull part of matter is they work on or according as the curioſity of the figure requires; and as I have ſaid before, there be infinite degrees of the dull part of matter; as ſolid, and fluid, thinner, and thicker, lighter and heavier, harder, and ſofter, and infinite degrees of innated matter, as ſtronger, and weaker, ſwifter and ſlower, and though I have ſaid that the innated matter is the thineſt part of onely matter, yet I do not mean the thin incipit matter, as I may call it for diſtinction ſake; for there is no incipit in infinite, and eternal matter, though there be dull in moving matter, but the innated matter is the infinite extract of the entity of infinite matter, it is the quinteſſence of nature.

Chap. 140. *The differences and alterations of figures.*

IN the progreſſe of figures, figures are created in figures. The reaſon is, that infinite motions which are the goo-

to-

to create, diſſolve, and diſpoſe of figures, as they pleaſe to move, ſhare as it were the infinite matter, in their working and dividing, and ſeveral motions, which is proper to the creation, of ſuch kinde of figures, aſſiſting each other in their works of creation; but not in the figures diſſolution; for thoſe motions which are proper to create one kinde of figure, are not proper to create another, for every figure hath different motions, in the creation either more or leſſe, which is the reaſon few, or none are juſt alike, but either in ſhape, or minde will differ, but when two figures are made with the ſame motions, among the ſenſitive innated matter, then their figures are juſt alike, as we ſhall ſee twins, and if the rational matters motion be juſt alike in ſeveral figures, their diſpoſitions and underſtandings are juſt alike, and if they differ in their motions but a little, they reſemble much either the minde, or the body; ſometimes both, but the more they differ, the leſſe they reſemble, but almoſt all creatures are diſtinguiſhable, which ſhewes ſuch variety of motions, as there needs no more repetition to move after one, and the ſame manner; for there are not onely different motions in different, and ſeveral figures, but in one and the ſame figure, for the ſame figure doth not look when it is old, as when it was young, nor when it is ſick, as when it is in health; nor when it is cold, as when it is hot, nay the figure will alter and change, every minuit either by the altered motion of the ſenſitive, or rational; but moſt commonly they alter their motions together, as in a joynt concent, for a troubled minde will make the body appear heavy and ſad, for joy and grief will make different countenances in the figure, and ſo every paſſion in the minde, is moſt commonly matched with a countenance agreeable thereto, and moſt commonly other exterinal actions, yet although the motions may differ, the innated matter may be of one and the ſame degree, for I do not ſay every degree of innated matter moves alwayes in one kinde of motion; for though every degree of innated matter, is of a particular ſtrength, yet not of a particular motion.

Chap. 141. *Of ſeveral Worlds.*

AS the Sun differs from the earth and the reſt of the planets, and earth differs from the ſeas, and ſeas from the airy skie, ſo other worlds differ from this world, and the creatures therein, by different degrees of innate matter, on different degrees of dull part of matter, which makes different figures by different motions, and as this world is of a ſpherical figure, ſo other worlds may be of other figures; as for Animals, although all Animals are not of one ſhape; for a man differs from the ſhape of a horſe, or any other four-legged creature, and every ſort of beaſt differs from one another

ther in their ſhape. So likewiſe there is difference in their kinds, as well as in their ſeveral ſorts, for beaſts kind differ from birds kinde, ſo may worlds differ for all we know, and if we ſhould gueſſe by the ſeveral changse, and variety in nature, it is very probable it is ſo; & who knows, or indeed might not very eaſily beleeve it ſo to be, that worlds may be match'd by a ſympathetical conjunction to produce other worlds, as other creatures do, for we finde the planets by a ſympathetical conjunction to produce other creatures, as the ſun and [illegible]. And it is to be obſerved, that as ſeveral motions create figures, ſo ſeveral motions work by their created figures, and thoſe motions that creates figure by a ſympathetical conjunction, create after their own likeneſſe, either in the nature or ſhape, or both, but thoſe figures that create figures without conjunction of figures, after their invention, or imitation as I may ſay, cannot make ſuch figures as conjunctially of figures man calls artificial figures, as birds make neſts, or beaſts make dens, and men houſes, but to reckon all artificial figures, is paſt my skill, and beyond my life, who knows ſince we finde new and unheard ſtars, but that they are the birth of other worlds.

An

AN

EPISTLE

TO ALL

Learned PHYSITIANS.

MOst reverend, and grave Fathers of health, I present this work unto your sage judgements, your prudent praxises, your great experiences, your studious observations; your miraculous cures, and humbly lay it on the tables of your studies, in hope some spare time may invite you to read therin.

I dare not commend it, lest you should disprove it; for as your wisdomes value it, so it is good, or bad.

AN EPISTLE TO MY READERS.

I Am to be pardoned, if I have not the names and tearms that the Anatomists have or uſe; or if I have miſtaken ſome parts in the body, or miſplaced any: for truly I never read of Anatomie, nor never ſaw any man opened, much leſſe diſſected, which for my better underſtanding I would have done; but I found that neither the courage of nature, nor the modeſty of my ſex would permit me. Wherefore it would be a great change, even to a wonder I ſhould not erre in ſome; but I have ſeen the intrals of beaſts but never as they are placed in their bodies, but as they are cut out to be dreſt, and in the ſhambles, and perchance I haue ſeen paſſing by the ſhambles, a cruel Butcher cut the throat of a beaſt, or rip up the body, where the guts and garbidge would burſt out, but that gave me not much more knowledge, not ſeeing how they lay in their bodies: and though it is a uſual cuſtome, for Ladies and women of quality, after the hunting a Deer, to ſtand by until they are ript up, that they might waſh their hands in the blood, ſuppoſing it will make them

white, yet I never did; but as I have ſaid before, I have ſeen the intrals of beaſts out of their bodies, which intrals *I* have heard are much like a mans, eſpecially a hogs, ſo that *I* know man hath a brain, a heart, a ſtomack, liver, lights, ſpleen, and the like; yet theſe *I* never viewed with a curious and ſearching eye, but as they have laien in ſome veſſels; and as for bones, nerves, muſcels, veines and the like, *I* know not how they are placed in the body, but as *I* have gathered ſeveral times from ſeveral relations, or diſcourſes: here a bit, and there a crum of knowledge, which my natural reaſon hath put together, of which meat my wit like an unexperienced Cook hath ventered to dreſſe, if it pleaſeth the palats of my readers, *I* ſhall account my time not loſt; if not it is not the firſt diſh of good meat that hath been diſguſt.

OF THE

MOTION

OF THE

BODIE.

PART IV.

CHAP. 141.

PHyſitians ſhould ſtudy the motions of the body, as naturall Philoſophers, ſtudy the motions of the heavens, for ſeveral diſeaſes have ſeveral motions, and if they were well watched, and weighed, and obſerved, they might eaſily be found out ſeverally; and as they take compaſs of the heaven, and ſtand upon the earth, ſo they may take the degrees of the diſeaſe, although they diſſect not the body. Thus natural Phyſitians may know, when the ſun of health will be eclipſed by the ſhaddow of melancholly, which gets betwixt the body and health; and natural phyſitians may come to know the thoughts, as they the ſtars, by ſtudying the humors of men, & may know what influences they may have upon the body; and may know the ſeverall changes of their humor, as they the ſeveral changes of the moon, that the ſeveral changes of the humor, cauſeth the blood to ebb and to flow, as the Tides of the Sea; thus they may make an Almanack of the body, for to ſhew what weather and ſeaſons there will be, as great tempeſts and ſtormes of wind-collick; whether there will fall upon the

Lungs,

Lungs, great rheumes, as ſhowers of rain, or whether there may be great and hot fevers, or whether there will be earthquakes of making Agues, or cold, and dumb-palſies, or whether there will be dearths of fleſh, and ſo leave bones bare, by the droughts of heated fevers, or whether the over-flowing of moiſture, which cauſeth dropſies; thus if we could finde the ſeveral motions in ſeveral diſeaſes in a body, as ſurely might be done by obſervations, and ſtudy, and could finde out the ſeveral motions by the ſeveral operations in phyſick, we might ſurely ſo apply them together, as to make animals, though not live eternally, yet very long; and truly I think this both of philoſophical opinions, may give a great light to this ſtudy.

Phyſicians muſt firſt take care in their preſcriptions, to prevent errours of miſtake, before he apply remedies to cure.

Cap. 142. *The frame of mans body.*

I Will firſt diſcourſe of the orderly courſe of nature, which is to have a perfect ſhape according to the kinde, or ſort of figure, it was created to; that is, like a houſe to be well built; next to have it ſtrong, and firm; thirdly, to have it commodious; fourthly, to have it well furniſhed; fifthly, to have it clean from dirt, or rubbiſh; ſixthly, to keep it in repair; ſeventhly, to prop it from falling down with old age, the pulling it down by ſome evil accident, or burning it by feavers, or the like, or drowning it by dropſies. And though I may ſimilize it, to any figure, yet I onely imploy it, to man-kinde; that is, to have a perfect and upright ſhape, a clear ſtrength, ſound parts, plump and fat, clean from groſs humors and obſtructions, to keep it healthful with wholſome food, to help nature with cordials, or phyſick, death being the deſtruction.

Chap. 143. *Of natural ſelf-tyrannie.*

MOtion doth not onely divide matter infinite, but diſturb matter infinite; for ſelf-motion ſtriving and ſtrugling with ſelf-motion, puts it ſelf to pain; and of all kinde of motions the animal motions diſturb moſt, being moſt buſie, as making wars and diviſions; not onely animal figures, againſt animal figures, but each figure in it ſelf, by diſcontents and diſlike; which diſcontent makes more pain, then eaſe, or pleaſure, or tranquillity, by reaſon of irregularity; but motion is an infinite and eternal tyrant, on infinite figures; for as motion makes figures, ſo motion diſſolves figures, which makes infinite, and eternal matter, eternal reſtleſs; for the extract of infinite matter, which is an innated matter, which innate matter is motion, and makes the dull part of matter ſo too, by working thereon; thus the onely and infinite matter is a tyrant to its ſelf, or rather, I may ſay, infinite, is a tyrant to motion, and motion to figure,

and

and eternity to all. For though infinite, eternal matter, motion, and figure, are individable, yet they are all as ſeparated, in aſpiring for motion, although it is but an effect of matter, yet ſtrives for abſolute power over matter and figures, and infiniteneſs ſtrives for the abſoluteneſs and power over matter, motion and figure; and eternity ſtrives for abſolute power over all; thus the effects ſtrive to have power over the prime cauſes, which is the onely matter; for if there were no matter, there could be no figure, nor motion, nor infinite, nor everlaſting, the like do the minor effects over the minor cauſes, for effects are cauſes of effects.

Chap. 144. *The two ground motions amongſt the rational innate matter.*

THe rational innate matter, moves as it were two-fold, for they have different motions in the figures, from the figurings, like as the ſenſitive matter, which moves the dull part of matter, internally and externally, according to the nature of each figure; as for example, the creating of a figure is one way, and the ſeverall actions of the created is another way; the like doth the rational innate matter, it firſt runs into figures, and then moves figuratively: Again, ſome figures they are ſtronger then others, will force the weaker figure to move after their manner.

Chap. 145. *The two chief parts belonging to man, is the head, and the heart, wherein reſides the rational ſpirits.*

THe head, and the heart, are the two reſiding parts, for the rational innate matter to move in, making paſſions in the heart, and reaſons in the head; and whenſoever thoſe parts be diſaffected, the underſtanding and paſſions are diſordred, and many times ſo, as never to be rectified; but ſome times this diſorder comes by the miſ-working of the ſenſitive innated matter, and ſometimes by the wrong ſteps and falſe meaſures of the rational innated matter. But though the animal knowledg or reaſon be diſordered, yet not extinguiſhed, unleſs the annimal ſenſe be abſolutely altered, which is to dye; for though they move not regular, yet they move after an animal manner: As for example, a man although he goeth not upright, according to his natural ſhape, but creeps upon his hands and knees, or that he is forced to role from place to place, having neither armes nor legs, yet he moves in an animal manner, and partly to what his natural ſhape is, for theſe force motion, or want of ſome of the outward parts alters him not from being an animal, nor it from being a man, unleſs all the ſenſitive motions, which naturally belong to their figure, be altered, and then he turns from that kinde of creature.

Which moves in figures like dancing.

Chap.

Chap. 146. *Whether the paſſions are made in the head or heart.?*

SOme are of opinion, the paſſions are made in the head ; others that they are made in the heart ; for my part I am of the latter opinion ; that is, that all paſſions are made in the heart ; as Love, Hate, Fear, Anger, Grief, Jealouſie, Envy, Malice, and the like ; and alſo the Will, and opinions, which are a kinde of paſſions ; and that imaginations, conceptions, fancies, underſtanding, judgment, memory, and remembrance, is made in the brain ; and that which we call thought, or animal knowledg is made both in the brain and heart ; for if either of theſe two parts be wounded, that knowledg dies, as both the ſenſitive knowledg, and rational, both being that which we call thought, the one belongs to the body, the other to the minde ; for touch is a weak thought, and thought a ſtrong touch ; and my reaſon is why I think that the paſſions are created in the heart, and not in the head, is, firſt, paſſion and judgment ſeldom agree.

Secondly, when we have the paſſion of fear or anger, or the like ; all the motions that work to thoſe paſſions, are felt in the heart ; for if we do obſerve, we ſhall finde all paſſions ariſe from the heart, and all the parts near thereto will be diſturbed ; when in the brain we finde no violent motions at all, perchance the ſenſitive part may be diſturbed, as to make the head-ache, as with a general diſtemper.

Thirdly, there are oft times paſſions felt as it were in the heart, without any knowledg, or thought of it in the head ; as when we ſhall be ſad, and angry, and fearful, and know no reaſon why. Beſides, objects many times paſſe by, or as it were, ſteal through the ſenſes, and likewiſe creep through the brains, and raiſe a paſſion in the heart, without any notice taking thereof, or knowledg how it came therein.

Laſtly, that although there is a great ſympathy betwixt the paſſions, and imaginations, yet they are not after one and the ſame manner of motions, which ſheweth they are created in ſeveral figures, the one in the triangular heart, & the other in the ſpherical brain, and the different ſhapes of the head and heart, may be one cauſe, that makes the difference betwixt paſſions and imaginations, as well as the different motions.

But to prove paſſions are made in the heart, and not in the head, is, that when the brain is diſtempered and mad, as we ſay, yet the paſſions may be free and regular ; and Love, and Hate, which are the two chief paſſions, may be conſtant to the objects they were placed on ; thus the minde or ſoul, which is the rational innate matter, lies as much in the heart, as the head.

Chap. 147. *Of different paſſions in one and the ſame part.*

AS for paſſion, we ſhall love and hate at one and the ſame time, but not one and the ſame thing, at one and the ſame time, for that is impoſſible.

But different paſſions are made according to the ſubjects or objects they move by, or to; yet the rational innated matter which creates paſſions, may move partly ſympathetically, and partly antipathetically, at one and the ſame time. As for example, a man may be in love with a woman, for her beauty, or wit, or behaviour, and yet have an averſion to her bad qualities; but a man cannot love the perſon of a woman, and hate it, at one and the ſame time, but to the creating of thoſe paſſions, that ſympathies, as love, and hope, and joy, and the like; The rational innate matter, doth as it were ſpread, and delate its ſelf; but for thoſe paſſions that antipathies, it contracts it ſelf more together; as in hate, fears, jealouſies, doubts, envy, ſpight, and the like; and when two or three paſſions ariſe at one time; as a paſſion of grief for my friend that is killed, and a paſſionate hate to his murtherer, or the like; then the rational innated matter, divides its ſelf, partly moving after one manner, and partly moving after a quite contrary manner, and ſo may divide into as many parts, and after as many ſeveral manners, as their place or quantity will give way to; but when we love what was hated, or hate what was loved, then the innate matter changes their motions, towards ſuch a ſubject, or object, without a diviſion; but when they move diſorderly, the paſſions are like a tempeſt at Sea; paſſions beat againſt paſſions in a confuſed manner, diſtempering the whole body, cauſing the ſenſes to miſtake, with the violence thereof; likewiſe in the brain there may be oppoſite motions, amongſt one and the ſame degree of innated matter, either rational or ſenſitive, either by an alteration of motion in one and the ſame part of matter, or by diviſions moving in parts; but when the rationall innate matter moves in a regular diviſion, and the meaſures of time, and the notes of motions skilfully ſet, and rightly kept, that is curiouſly or neatly, and carefully ordered; then there is a harmony, which harmony is a quiet minde, gentle imaginations, a clear underſtanding, a ſolid judgment, elevated fancies, and ready memory; but when this rational innated matter moves diſorderly, there ariſes extravagant fancies, falſe reaſons, miſunderſtandings, and the like.

Chap. 148. *The affinity betwixt imaginations and paſſions.*

IT is the rational innate matter that makes paſſions, and not the ſenſitive innated matter, for the ſenſes onely preſent the objects, the rational the paſſions; which ſhews the rational innated matter, is as much in the heart, as in the head, and may be of the ſame degree of ſtrength, although they work different wayes, as being different figures, yet there is ſuch ſympathie with each other, whether by recourſe, or otherwiſe; as paſſions will raiſe imaginations, corrupt judgment, diſorder reaſon, and blindfold underſtanding: And imaginations will raiſe paſſions, as fear, love, hate, doubts, hopes, and the like; which ſhews that the rational innate matter, in the head, and heart, hath ſuch affinity as the ſenſitive innated matter hath in the ſtomach and head; as the pain in the head will make the ſtomach ſick, and a ſickneſs in the ſtomach will make the head-ache, I will not ſay at all times, but moſt commonly; neither will imaginations at all times raiſe a paſſion, nor a paſſion, an imagination, but very often.

Chap. 149. *Of the Brain.*

THe brain is not the cauſe of knowledg and underſtanding, for a bird that hath but a little brain ſeems as underſtanding, if not more, then a great beaſt, as an ox or the like, which hath far greater quantity of brain; but perchance the bird hath more of the rational innated matter, in his little brain, then the beaſt that hath more braine, for the rational innated matter, moves in the brain, not on the brain, for that is wrought and moved by the ſenſitive innate matter, being made of the dull part of matter; for when the brain is defective, it is cauſed by the ſenſitive innated matter, not the rational innated matter; yet oft times the ſenſitive innate matter diſorders the motions of the rational innated matter, as we ſhall ſee in diſtempered and ſick bodies; like-wiſe the diſordred motions in the rational innate matter, will diſorder the ſenſitive motions, as we ſhall ſee by troubled mindes.

Chap. 150. *Of the multitude of figures amongſt the rational matter in the brain and heart.*

THe reaſon why we may have millions of ſeveral figures in our memory at one time, ſo likewiſe raiſed up to our remembrance, when we can receive but one perfect figure through our ſenſes at one time, is that the paſſages for outward objects to enter, is ſo ſtraight in all animal figures, as that but one object can take place therein, I mean as being perfectly diſtinct,

diſtinct, for the paſſages being ſtraight, many objects entring at once, make a confuſion, at leaſt a diſorder, for if more then one object be preſented at one time, to any particular ſenſe, they are received but by piece-meals, as in the ſmall parts; and many times the divided parts are ſo mixt together, as no piece is perfectly ſeen or heard, or ſmelt, or taſted, or touched; beſides, the paſſages being ſtraight, the ſenſitive innate matter cannot work ſo regular, having not liberty, for it is not with the ſenſitive innate matter as with the rational innate matter, by reaſon the ſenſitive innate matter works upon groſs materials, as upon the dull part of matter, which makes that it cannot move ſo nimbly, nor divide into parts ſo ſuddenly, eſpecially in a ſtraight paſſage, as the rational innate matter can, which moves onely in number and meaſure, without any dull mixture, for the rational innate matter, can figure out the whole world, and millions of ſeveral figures therein, ſooner and ſwifter then the ſenſitive innate matter, can print one figure upon any of the ſenſes; and not onely thoſe figures that the ſenſitive innate matter preſents, or hath preſented, but makes thoſe figures that were never preſented, as thoſe we call phantaſms; and as I ſaid the rational innate matter hath more room to move in, as in the head, and heart, then the ſenſitive innate matter, hath in the ear, eye, noſtrils, mouth, or pores of the fleſh, ſo there may be a greater quantity, or proportion of that rational moving matter together, in a body, or bulk, as I may ſay, then of the ſenſitive innate matter, in the foreſaid paſſages, and according as the quantity of the rational matter is, there is the more knowledge, and clearer underſtanding; the quicker wit, and the livelier memory, the freſher remembrance, and the more multiplicity of thoughts; for it is not onely the largeneſs, and extent of the place wherein the rational matter moves in, that makes the more knowledg and underſtanding, and the like, but the quantity of the rational matter; for a great head may have but a little wit, or dim underſtanding, and a little head a quick wit, and clear underſtanding; if the little head be full of this rational innate matter, and the great head be empty thereof; but if the room (or place) be large, and filled with this ſort of innate matter, according to the bigneſs, that creature will be very knowing, underſtanding, and ingenious; for imagin that all the heads of mankinde were put into the compaſs of one head, and a ſufficient quantity of that rational matter therein, that creature whatſoever it were, would have not onely the knowledg of every particular brain joyned together, but that knowledg and underſtanding would increaſe as uſe-money, for that bulk or bank would multiply, being put together.

Chap. 151. *Of thoughts.*

MAny wonder what Thoughts are, and how ſuch millions can be within ſo little a compaſſe as the brain.

I anſwer, that a llittle quantity of the rational innate matter, may make millions of figures, which figures are thoughts.

As for example, from eight notes, milions of tunes are made, and from twenty four letters millions of ſeveral Languages may be made.

The world is preſented like a popit-play in the head.

Likewiſe one lump of clay may be molded, and formed into millions of ſeveral figures; and like Pictures many figures may be drawn in one piece, and every figure in a ſeveral poſture; Likewiſe a little picture will repreſent ſo great an Army, as would take up many acres of land, were it in a pitched field.

Again, a Globe no bigger then a Head, will preſent the whole world.

Again, ſay ſome, how is it poſſible there ſhould be ſo many ſeveral thoughts in the head at one time, and how from one thought ſhould there ariſe ſo many of a ſudden, and at ſome times ſo extravagant as to have no coherence therein, at other times very methodicall, and ſympathetical?

To the firſt I anſwer, how many ſeveral poſtures may a man put his body into at one time, nay, I may ſay one part of the body? for how many ſeveral poſtures may the face draw it ſelf into at one time?

Secondly, I anſwer, that many ſeveral wheels will move with one motion, nay with one kinde of motion ſeveral wayes, and many wheels with ſeveral motions ſeveral wayes, and all within one, and the ſame compaſſe, and from one prime ſpring. Again, ſome may wonder how it is poſſible figurative thoughts can inlarge and contract the demenſion, and extenſion; I anſwer, how is it with Proſpective glaſſes, convex, and concave glaſſes; likewiſe a ſcreen, or a fan, or the like, which can fold in many folds, into one fold, then can draw them out into a plain ſtraight piece again, and ſo ſhut up into a fold, or open in a plain piece, as often and as quick as a thought, and millions of the like examples, may be given, but theſe are enough for this time, on this ſubject.

Chap. 152. *Of thinking, or thoughts.*

THoughts are more pleaſant to the minde, then the appetite to the ſenſes, and the minde feeds as greatly on thoughts, as a hungry ſtomacke doth upon meat; and as ſome meat breeds good nouriſhment, and ſome bad nouriſhment, cauſing either health and ſtrength, or diſeaſes and pain; ſo doth

thoughts

thoughts, for diſpleaſing thoughts of grief, and all ſad remembrances cauſe the minde to be dull, and melancholly, or froward, and diſcontented; and pleaſing thoughts cauſe the minde to be chearful, pleaſant, and delightful. Beſides, the minde is like chewing of the cud, for what the ſenſes bring in, and are fed with outward objects; thoſe ſwallowed objects, the thoughts of the minde chews over again; thus the minde is alwayes feeding; beſides, the ſenſes have no longer pleaſure, or pain then the objects remain; but the minde is as much grieved, or delighted when the object is removed, as when they are preſent; As for example, a man is as much grieved when he hears his friend is dead, or kill'd, as if he ſaw him die, or ſlaine; for the dead fried lives in the minde, not the minde in the dead friend, and if a man have a fine houſe, or great riches, or an excellent rare race of horſes, or the like, whereupon the minde takes as great delight in thinking of his fine houſe, as if it dwelt in the houſe, and as great delight in thinking of his riches, or what he could do with the uſe of his riches; for the minde doth not ſo much dwell in the houſe, as the houſe in the minde, nor the minde doth not take ſo much delight in the uſe of the riches, as the uſe to be in the minde, and the remembrance of the curious horſes is as much in the minde, as when thoſe horſes were in the eye; for when the ſenſe is filled, the minde can but think, and the minde may as well think when the objects are gone, as when they are preſent, and the minde may take as much delight, in thinking what the ſenſes have enjoyed, as what they are to injoy, or deſire to enjoy; for thoughts are the fruition of the minde, as objects the fruition of the ſenſes; for the minde takes as much delight (if not more) in thinking of an abſolute power, as when the commands of an abſolute power is obeyed, for obedience dwells no more in the minde when it is acted, then it did before it was acted, or by the imagination that it is acted; thus the minde receives no more by action, then it doth by contemplation, onely when the pleaſure of the ſenſes are joyned with delightful thoughts, may be ſaid to be more happy, though I beleeve the pleaſure of ſenſes draws the delight from the thoughts; for the more at reſt the body is, the more buſie the minde is imployed, and as torments of the minde are beyond the torments of the body, or at leaſt the diſpleaſure of the ſenſes; ſo the delight of the minde is beyond the eaſe or reſt of the body, or the pleaſure of the ſenſes.

CHAP.

Chap. 153. *Of sleep and dreams.*

SLeep is caused by a tiredness of the spirits, for when the sensitive motions are tired, with the working on the dull parts of matter, which tiredness is slacking the motions, or changing their motions, as when they work lasily, then the figure grows drousy, and the senses dull, being weary of penselling, copying out objects upon the optick nerve. Likewise with printing letters, and setting notes on the drum of the ear, or in drawing platforms of several tasts, touches, and sents on the tongue and pores of the flesh, or striking, or playing on the nerves, and on the dia mater and pia mater, of the brain, but many times the figure grows drowsie, and the senses dull, when the sensitive motions are idle for want of work; that is, having no variety of objects presented to them; that is, of such kinde of works; for the innate matter never ceaseth to move, although the motions are not alwayes agil, and quick, nor after one and the same manner, but when they alter the motions, as I may say more proper then to slacken them, they do as it were cast anchor, pulling down their sail, going as it were under hatches, and the figure that is like a ship, where the motions of the breath are like waves of water, that heave it up, and then sink down, but saile not, nor steer not to any Coast; and the sensitive innate matter which is in this action, like Mariners when they work under the hatches drawing and winding up the slimy humours in the body, like ropes by attractive motions, staying and setling the loose parts, by retentive motions; *a* placing and putting disordered parts into their proper places by disgestive motions, and all the motions busiely imployed; some mending the figure, stopping the leaks, dearning, *b* and sewing together the torne sailes, oyling *c* and greasing the keel, pitching and tarring the cresses; tying and twisting the roaps, drawing the superfluous moisture to the gutter ready to be pumpt out, sweeping all the rubbish and dirt on a heap, ready to be flung out; some running up, and returning from the deck, which are the pores of the skin; but the rational innate matter, is the master of the Animal ship, and the sensitive innate matter, as the Saylors, those works on the dull part of matter, the other directs when occasion serves, that is, when the body is in action; for though the rational innate matter never labours on the dull part of matter, yet they counsel and direct the animal ship, when it is built, and set afloat, that is, when the body is come to the full growth, and orders it in blustrous storms, and great dangers, but these the rational innated matter, when this animal ship is cast to anchor, which is to sleep, moves onely in a rocking, or rowling motion, as it were from side to side of the cabbin, which is the brain, making no perfect figure

a Sleep nourisheth and gives health, and strength.
b Nourishment.
c Healing decayes.
Fatting.
Strengthening.
Knitting the muscles, nervs and the like.
Urin to the bladder.
Excrements into the guts.
Vapors

nor

nor gives direction, this is ſleeping without dreaming; but dreaming is when they move in figures, making ſuch figures as theſe objects, which have preſented to them by the ſenſitive motions, which are onely pictures, or copies of the Original objects, which we call remembrance, for remembrance is nothing but a waking dream, and a dream is nothing but a ſleeping remembrance, but if the ſenſitive innated matter moves in the ſame manner, on the ſame place, as printing and drawing ſuch figures or objects in the optick nerve, or ſetting ſuch notes or letters on the drum of the ear, or drawing ſuch platforms on the dura mater, or pia mater of their brain, or the tongue, fleſh, or skin of their own accord, without the preſence of the outward objects; then we ſee here taſte, ſmell, touch, as ſtrong as if we were awake, if their motions be as ſtrong and induſtrious; but many times we have in ſleep thoſe objects but in part, and not in whole, the reaſon is, that either the ſenſitive innated matter is ſlow, or elſe they are not ſo perfect Artiſts to work without a ſampler, working by miſplacing, and miſtaking, or elſe works by halves, according to their skil, or as appetite moves them, make a hogpog, or gallimophry of many ſeveral pieces or draughts, into one figure or picture, which make extravagant dreams; by reaſon they work not in a methodical manner, and the rational innated matter, moving in the ſame manner makes a mixt reſemblance, but the ſenſitive innate having not the outward objects in ſleep to work by, ſeldom works perfect, or plain, and working imperfectly they move diſorderly, and for the moſt part that which makes us ſo often perturbed in our ſleeps, is, by moving croſſe, and irregular, which croſſe, Irregularity inſnarles ſeveral motions, ſo as there is no diſtinction, which is the reaſon that our dreams are ſo often obſcure, and dark, as we can make nothing of them; and when the rational innate matter moves croſſe, and tumultuouſly, our dreams are moſt commonly fearful, and when the ſenſitive innated matter works ſo diſorderly, our dreams are painfull, and when the ſenſitive innated matter works perfectly, and the rational innate matter moves juſtly, we have as much knowledge, and underſtanding of what we dream of, and as much ſatisfaction from our ſenſes, as if we were awake, and the real abjects preſented to us.

The innate matter can move ſlower then their ſtrength, or natural agilneſſe, but not above nor beyond their natural ſtrength and agilneſſe.

Chap. 154. *Dreamings of living, and dead figures.*

THoſe friends in acquaintance that that have been dead, a long time, and appear in our ſleep, we never queſtion the truth of their life, though we may queſtion them how they lived; again, the reaſon is, that theſe figures are as perfect, and lively to our preſent ſenſes in our ſleep, as when we are awake; for oftimes the ſleeping motion prints figures, on

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the inſide of the optick nerve, as on the inſide of the pia mater, as the waking motion doth on the outſide, and when we hear them as it were diſcourſe words, right on the inſide of the drum of the ear, or pia mater, by the ſenſitive motion, as on the outſide when we are awake; for all the ſenſitive works inwards aſleep, as outward awake; for if we ſmell ſents pleaſing, or diſpleaſing, the ſenſitive ſpirits draw lines, and ſet notes on the inſide of the dura mater and pia mater of the brain; and ſo for taſte and touch, they draw plateforms in the inſide of the skin, either of the skin of the tongue, or any other outward parts of the body, as they do on the outſide of the skin awake; Thus the ſenſes preſent as perfect prints to the rational oft times in ſleep, as awake, onely they print on the inſide a ſleep, and on the outſide awake, and what rational creature would not beleeve their ſenſes; for ſhould a man ſee another man die, and ſee him buried, and afterwards ſhould ſee that man alive again, and hear him ſpeak, and touch him, ſhall feel the ſubſtance of fleſh, would not he think he lived? *Thomas* the Apoſtle queſtions the relations of our Saviours reſurrection from the grave, but never queſtioned his ſenſes, when he ſaw, and touched him; ſo in our dreames, when the ſenſitive innate matter prints ſuch figures on the optick nerve, as of ſuch a perſon which is dead, the rational matter ſtraight paterns out the ſenſitive print; and when the ſenſitive print, and the rational figure is juſt alike, the other motion of the rational matter cannot queſtion the truth of that figure, or figures being there, though they may queſtion how they come alive, again treating with it, as if awake, the ſame is if the ſenſitive innated prints, any thing as dead, which is living, and the rational pattern it, the reſt of the rational motions make no queſtion of the truth of thoſe ſleeping motions, untill waking motions otherwayes inform them; for rational motion in every particular figure, knows little of the ſenſitive, but what the ſenſes ſhews them, in the ſeveral motions, yet the rational generally knows what they preſent unto them, which every particular ſenſe doth not, each motion is unknown, and are ſtrangers to each other in one and the ſame figure; for the ear knows not what the eye ſeeth, nor the eyes know not what the noſe ſmelleth, nor the noſe knows not what the tongue taſts, nor the tongue knows not what the body feels, but the rational innat matter in a figure, knows all the ſenſitive motions in the ſame figure, as long as the figure is perfect, and moves in an Animal way, and that the rational motion moves regular; for when the motions are irregular, they can take no perfect copies, nor notice how the ſenſitive move, that is, the reaſon that in perturbed paſſions, which are onely irregular motions, the ſenſes become as it were uſeleſſe to them, but moſt commonly the diſorder of one brings the diſorder of the other, I will not ſay at all times, and ſo when the ſenſitive ſpirits are regular

gular, the rational is regular, but not at all times, for ſome times the one is regular, the other is not, but the rational which takes copies of the ſenſitives is oftener diſordered by the ſenſitives, then the ſenſitives by the rational, for when there is grief in the minde, many times the body is in good health, but it is ſeldom known when the body is ſick, but the minde is troubled.

Chap. 155. *Of Local Dreames.*

THe reaſon that many times we dream of walking woods or houſes, and the like, is through this following reaſon; The rational innate matter, as I often ſaid before, turns moſt commonly into ſuch figures, as the ſenſitive innate matter prints, or hath printed upon the ſenſes, now if a tree or houſe, or the like, be printed on the inſide of the *pia mater*, or the like ſenſitive part, when we are aſleep, the rational innate matter ſtraight figures them, theſe figures move after a local manner, although they have not an animal, or local ſhape; the reaſon is, that the rational innated matter being purer in it ſelf, without the mixture of dull matter, moves onely in their own matter, and the figure moves in the matter; whereas the ſenſitive innated matter working upon the dull part of matter, moves in that dull matter, and not the dull matter in the ſenſitive innated matter, that is the ſenſitive innate matter moves in the dull part of matter, and the dull part of matter is moved by the ſenſitive innate matter; thus the ſenſitive figure is moved, but not moving, but the rational innated matters figures give their own motions; likewiſe if we have ſeen a battle, or heard of a battle, and afterwards we dream of the ſame, or of the like battle; then the rational innated matter puts its ſelf into animal figures, and moves after a local manner, each figure placing it ſelf after that manner or way as was related, or printed by the ſenſes, or after away of its own invention, and when the figures encounter each other, as they muſt do to fight a battle in the brain; and then ſome ſeeme to be falling, and others dead, and ſome mangled; thoſe figures are as falling and broken, and ceaſe to move after the local manner; and when one party ſeems to move as in a confuſion, then the motions are irregular, and juſt as the ſenſes preſent, ſo doth the rational innated matter act in the brain when we ſleep, and ſometimes when we are awake, as in imagination.

Chap. 156. *Of the ſenſes, and the objects that paſs through the ſenſes.*

THat innate matter which I call the ſenſitive ſpirits makes holes, which holes ſerve as doors in animal figures to receive outward objects, as the holes that are made in the eyes, ears,

I call that matter ſo for diſtinction.

ears, noſtrils, mouth, and the pores of the skin, wherein the animal receives light, ſound, ſcent, taſt, and touch; the ſenſes are brought and preſented by the ſenſitive innated matter, to the rational innated matter, who takes knowledg thereof; as for example, there is a houſ or a tree, or any the like groſs material figure, theſe being placed before the paſſage of the eyes, thoſe ſenſitive ſpirits, in the eye taking notice thereof, with the help of that brings the objects therein, ſtrait prints or paints thoſe objects upon the optick nerve, or upon the outſide of the brain, as the *dia mater*, or *pia mater*, upon which the rational ſpirits view as on pictures, then copie them out, not by working on the dull part of matter, as the ſenſitives innated matter doth, but turn themſelves by number and meaſure, into figures like thoſe printed or painted figures; the difference is, that the rational matter is like ſculptures, the others as pictures upon flats; theſe rational figures we call knowledg, or underſtanding, and as long as theſe rational figures laſt, though the object is abſent, and the prints rub out, by other objects, or by diſtance of place, or the like, we call memory; but when thoſe rational figures are diſſolved, and afterwards repeated be wrought without a preſentment of the ſenſes, we call it remembrance, and the reaſon the memory is not ſo ſtrong, as the preſent ſenſe, nor the remembrance ſo perfect as the memory is; that with the preſent object there are two figures as the rational ſculpture, and the ſenſitive point, when the memory is but one, as the ſculpture, which remains as with the rational, but the ſenſitive print is rubbed or worn out, and the reaſon why remembrance is not ſo perfect, as the memory, is, becauſe remembrance is but a copy of a copy, from the original print, for remembrance is but a pattern taken from the Memory, and the memory but a pattern taken from the objects.

Chap. 157. *Of figure preſented to the ſenſes, and figures together.*

THe reaſon why figurative ſenſes are quicker then the figurative growth, is, It is leſs labour in printing on the dull part of matter then in cutting out ſculpt figures, not for the ſtrength of actions, as for the ſeveral laborious actions therein, fetching their material a far way, and for many ſeveral places, which requires time and place, when printing is but a preſs laid upon a flat.

Chap. 158. *Of objects, and the ſenſes, ſomething differing from the other Chapter.*

THat innate matter which I call the ſenſitive ſpirits for diſtinction ſake, makes holes or doors in animal figures, to receive outward objects; as the ears, eyes, noſtrils, mouth, pores

pores of the skin, and the like, and theſe outward objects are preſented, to that part of innate matter which I call rational ſpirits, but that part of innate matter I call ſenſitive ſpirits; as for example, thus, there is a houſe, or a tree, or any the like groſs material figure; which is ſubject to the ſenſe of animal figures, theſe ſtanding at the doors of the eyes, which as ſoon as the ſenſitive ſpirits perceive, or other ſenſitive ſpirits that come in through theſe doors, ſtrait print or draw the ſame figure upon the optick nerve, which optick nerve is made of dull matter, by the ſenſitive ſpirits from whence the rational ſpirits viewing from thence that picture, ſtrait run themſelves by number and meaſure into the likeneſs of that picture, which are thoſe we call knowledg or underſtanding, and as long as thoſe figures laſt among the rational ſpirits, though the objects are abſent that we call memory, for when theſe prints are rubbed off by the ſenſitive ſpirits, and others placed thereon, or vaded by diſtance of place, or obſcured by ſhutting the lids, yet the figure thereof may remain amongſt the rational ſpirits, which is, as I ſaid before, memory, and the repetitions of figures; that is, when one and the ſame figure was diſſolved and created again amongſt the rational, it is remembrance; but memory is not ſo ſtrong as the preſent ſenſe, nor the remembrance ſo perfect, as the memory and the reaſon is, that what the ſenſitive ſpirits wrought on the optick nerve, is like a printed or painted figure, and that which the rational ſpirits make is like a carved ſtatue, like painting, or ſculpture, ſo that in memory the ſculpture remains, and in remembrance is created, although the printing, or painting is worn out, or rubbed out, ſo that the preſent ſenſes have two figures, one upon the optick nerve, the other amongſt the rational ſpirits, wherein memory remains but one, and the reaſon why remembrance is not ſo perfect as memory is, becauſe it is but the copy of a copy from the original, for remembrance is but a pattern taken from the memory, and the memory but a pattern from the object.

Chap. 159. *Of the figure of the head.*

THe figure of the brain gives ſtrength to the ſenſitive motions, and to the rational knowledg in animals, for the ſcull being made with an arched rough, and the ſides being hollow, and the whole head round, which hollow ſides arched rough and round compaſs, cauſe rebounds * and reflections of the motions therein, which multiplie, increaſe, and ſtrengthen them, as for the motions and figures of ſound, the notes that are made are ſtruck from the drum of the ear, as balls from a hand, to the concave part, and from thence rebound from ſide to ſide, and fall down, as a new note is raiſed, or like many balls ſtruck one after another, ſo rebounds follow

* As we finde in Churches, and caves made hollow arched, a noiſe founds loudeſt.

follow one another, and according as they are ſtruck, ſo are the rebounds ſtronger or weaker, and according as they are repeated, ſo do they laſt; the ſame for ſight, for * lines piercing from the optick nerve, darting on the concave parts reflect, and theſe reflections cauſe double lines, which make the ſenſitive figures on the optick nerve appear plain to the rational figure, but if they rebound, and reflections be diſorderly returned by diſordered motions, they make a confuſion, both in the ſenſe, and rational knowledg, as for taſt, it ſtrikes from the nerves of the tongue, upon the brain, beſides the hollow cave of the mouth, and according as the rebounds are made, and the ſtrokes are ſtruck, the taſte is ſtronger or weaker, but if the brain be ſtuff'd with cold, then the concaves being ſtuft and ſo ſtopp'd where the rebounds ſhould return, cauſe the taſte to be weak, inſomuch as not to be ſenſibly felt; and for touch, the pores of the ſkin and fleſh are hollow; wherein rebounds are made, ſtriking from ſide to ſide of each pores; and we finde by experience that thoſe parts which are not hollow, have not ſo ſtrong a ſenſe as thoſe that are hollow: Again, if the nerves from whence the ſtrongeſt ſtrokes are ſtruck be ſo ſlack, the ſenſe is weak.

Lines of light may be made by the ſenſitive ſpirits on the ſide of the optick nerve as on the outſide, as in ſleep.

As for ſcent which is brought through the noſtrils of the noſe, like water through ſpouts, which dilates its ſelf through the brain circling the *pia mater*, ſwelling, flowing and ebbing, like to the ſea about the earth, which when it flows it is ſtrong, but when it ebbs it is weak.

But by reaſon ſcent is made by ſtreaming motions, and not ſtriking and retorting motions. As the other four ſenſes are, it retaines not ſo long in the memory as the others do, although it may laſt longer in the brain or head, being more laſting, moſt commonly for the preſent then the reſt are, for a ſtinke will remain in the brain a great while, and ſo will ſtrong perfumes.

Chap. 160. *Of Sight.*

THe general opinion is, that all objects come through the optick nerve, and print the figures received on the brain, and that there are, nor can be no figures in the brain, but what the opticks bring in, and have paſſed through the eye; it is true, by experience we finde, that without an eye, we cannot ſee an outward object, as they are without us, yet we ſee thoſe objects, as they are without us in our ſleep when our eyes be ſhut; thus the ſenſe of ſeeing is not loſt, although the eyes were out, and the optick nerves ſtopped up. But ſome will ſay, thoſe objects in dreams have paſt through in parts, or in whole, therefore the queſtion will be, where an animal can have an inſight, if it were born blinde; but if it be ſo, as the opinion is, that no figure, or inſight can be, but what comes,

or

or hath paſſed through the eye, and optick nerve, muſt want that ſenſible knowledge; for according to that opinion, the ear can do the underſtanding no ſervice as toward that ſenſe, by reaſon ſound can make no figure to ſight, neither will taſte, nor ſent; but ſome may ſay, touch may diſcover ſomewhat of that ſenſe to the underſtanding, but I think not; for in my opinion, touch is as ſenſleſſe to inſight as ſound; for we cannot comprehend more of touch then of ſound, for depth and breadth are no more to inſight, then high notes, and low notes, nor ſoft nor hard, no more to inſight then ſwift, and ſlow, ſharp, or flat, nor pleaſure, nor pain, no more then harmony, and diſcord; but my opinion is, that figures are as inherent to the minde, as thoughts; And who can have an unfigurative thought, for the minde cannot have thoughts, but upon ſome matter, and there is no matter but muſt have ſome figure, for who can think of nothing; but the minde is like infinite nature, having no dimenſion, or extention, no center, nor circumference, no breadth, no depth, and as the innat matter creates figures, ſo the minde, which is the matter creates thoughts, which thoughts, are the figures of the minde; for when we hear of a deity, we ſay in words it is an incorporeal thing; but we cannot conceive it ſo in thought, we ſay we do, but we cannot prove we do; Tis true, the minde may be in a maze, and ſo have no fixt thought of any particular thing; yet that amaze hath a figurative ground, although not ſubſcribed; as for example, my eyes may ſee the ſea, or air, yet not the compaſſe, and ſo the earth, or heavens; ſo likewiſe my eye may ſee a long pole, yet not the two ends, theſe are but the parts of theſe figures, but I ſee not the circumference to the uttermoſt extention, ſo the mind in amaze, or the amaze of thinking cuts not out a whole and diſtinct figurative thought, but doth as it were ſpread upon a flat, without a circumference, and though there are not ſuch figures in the brain, as it brought through the opticks, yet ſuch figures as the minde creates; for the minde is innate matter, and innat matter is ſelf-motion, and ſelf-motion, is alwayes moving, and working, which working is figuring; thus the ſenſitives innated matter prints figures in the brain, and the rational innated matter creates figures in the brain after its own invention, which are imagination and conception, wherein are made imaginary worlds, without the materials of outward objects: and perchance theſe motions may create ſuch a figure as this world, and ſuch ſeveral figures, as the ſeveral creatures therein, although not ſo ſolid and laſting, becauſe thoſe motions want thoſe groſſe materials, of which they ſhould create it with, but the ſenſitive innated matter in this cauſe, prints theſe figures upon the brain by patterning the rational figures created in the brain, like as when it doth the outward objects,

All innate matter is as the minde, or life of nature.

and

and when the ſenſitive innate matter works on the inſide, as in ſleep, then it gives an inſight, which are dreams according to their copied prints, and theſe motions may make lines of light, triangular lines, for colours ſet notes of tunes, draw plat-forms of taſte, and ſent, make prints of touch, not onely the rational innated matter, by imagination; but the ſenſitive innated matter gives a ſenſible touch on the brain of all the outward ſenſes, by which touch, I mean ſenſible knowledge; thus the interior motions may move the brain with the variety of every ſenſe, without the exterior paſſages, or objects, and although it may not make thoſe very objects and ſubjects; yet ſuch as are proper for each ſenſe, and of the ſame nature as I ſaid before, draw lines of light, gathering motions make clouds, triangular motions make colours, inſnarled motions make darkneſſe without the outward object, and all other motions that make ſeveral figures, or printed figures.

All without outward help

The property of each ſenſe.

Likewiſe reflections without the help of the eye and ſo rebounds, and retorts; for ſound, and ſet notes print words, and plain tunes without the ear; ſo likewiſe for taſte, ſent, and touch; but when the brain is filled withoutward objects, the natural motion ſeldom works after their own invention, having not room as it were, or elſe it is as it were overpowred with work, having more objects brought in, then they can either conveniently place or ſort, or diſtinguiſh; but weak minds, which are ſlow moving matter, think life an inſenſible thing, and the head, or brain empty of figures, when it is not filled with outward objects, like as a barrel is not filled with liquor, thinks it empty, becauſe the thin air with which it is filled, is not ſubject to their groſſe ſenſes, ſo not to their weak capacities.

Fools have leſſe rational innated matter in their braines, then thoſe that are wiſe.

Thus it is not the outward objects that make the ſenſe, but the innate matter, which is ſelf motion, which is the ſenſe and knowledge, and the different motions therein, and therefrom, make the differences thereof, and though different ſenſe and knowledge, may be in different, and ſeveral figures, and ſuch kind of ſenſe & knowledge proper for ſuch kind of ſorts of figures; yet the figure adds nothing to the ſenſe, and knowledge, although the innated matter may give a figure ſuch a kind of ſenſe and knowledge and when that figure dies, that kinde of ſenſe and knowledge may alter, which was proper to that kinde of figure; yet if it were the figure that gave the ſenſe, and knowledg, and not the innated motions, there would be no alteration when the figure is made, or any extraordinary paſſion, whereby experience we finde the ſenſe, and knowledge do alter all, though the figure be perfect, and in health.

CHAP.

Chap. 161 *Of Light and Colours.*

Light and colour is made upon the optick nerve, as ſound on the drum of the ear, for light the ſenſitive innated matter draws long, ſtraight, ſmal, even lines, upon the optick nerve, and when colours are made, notes are ſet upon thoſe lines, drawn upon the optick nerve as thus.

Of colours, are when thoſe lines are ſet with quavor, ſemy quavor.

But light is onely when thoſe lines are drawn without thoſe quavors, ſemy-quavors, but as we ſhall ſee plain ſong books, after this manner.

And the knowledg the rational innated matter takes thereof, is when they move in plain lines, when they move in figures and lines, they move for colours.

Chap. 162. *Of Blindneſſe.*

Blindneſſe proceeds from many cauſes, as when the criſtalline part of the eye is not clear; for if it be dimming, or failing, or ſpotted and foul, the objects ſeem muddy, and miſty, and as the water of the criſtaline is coloured, ſo the objects appear; for as Diamonds, ſome are of a black water, others of a yellow water, ſome of a green water, or blue, others of a white water; ſo is the criſtalline part of ſeveral eyes, and according as it is clear, or coloured, ſo all objects appear.

A ſecond defect may be in the ball of the eye; for according to the compaſſe of the concave, or convex thereof, the objects are preſented neerer, or at a further diſtance, or longer or ſhorter, or broader, or narrower.

A third defect may be in the eye-hole; for according to the largeneſſe, or littleneſſe thereof, objects are preſented, either in whole, or in part, bigger, or leſſer, more, or fewer objects enter at once; for if the eye-lid hole ſhould be too large, the ſpecies would diſperſe too much, diſuniting parts and figures, and if too ſmall, the ſpecies cannot paſſe in ranck and file, as I may ſay; for though the ſmaller the circle is, the cloſer it contracts the ſpecies, and draws the objects into a ſtraighter line; yet if they ſhould paſſe in a crowd, they will ſtop the mouth of the paſſage, like water in a glaſſe when turned ſuddenly

ſuddenly downward, every drop ſtriving to get out firſt hinders each others ſo in the ſtrife, as none can paſſe.

A fourth defect may be in the optick nerve, if it be full of ſlime, and the like, it darknens the ſight, ſtopping the paſſage of the light, or if it be ſhrunk, or dried up, likewiſe if the head be full of groſſe vapours, it obſcures the ſight, as a thick miſt doth the ſun; for this foul foggy, and groſſe vapors hinder the ſpecies from entring, and the ſenſitive innated matter that ſhould print theſe objects, on the optick nerve, and if they are not quite ſtopt, yet it hinders the regularity, making that innated matter to work by piece-meales, or elſe ſtaies not ſo long, as to take a perfect ſurvay.

The fift and ſixth defect may be, if the eyes move too quick, or too ſlow, which makes the ſight imperfect, or dull; for too quick motions of the eye dazles the ſight, and clips and cuts the exterior objects into ſo many parts, as no one part can be perfectly known, or ſeen; and too ſlow motion blunts the ſight like a ſharp point that is ſtruck upon a ſtone, or the like; beſides, when it is fixt too long upon one object, other objects paſſe by before it removes, or wearies it ſo much as one cannot take notice of it; But when the eyes are too quick, it is by reaſon the nerve ſtrings that tie and faſten the ball of the eye to the head, are too ſlack, which makes the eye ball ſo looſe as the leaſt motion moves it, or elſe theſe nervous ſtrings are too ſmall which makes them ſo weak, as every little motion moves, ſo as they are alwayes in motion as it were; for if the nerves, and ſinew-ſtrings be too ſmall for the weight of the eye ball, it may alwayes have a trembling motion, like a the aſpen, or like weights that cannot poiſe ſteddy, as long as there is a diſproportion; and when the eyes are too ſlow the reaſon is when the ſinews, or nerve-ſtrings, are ſo ſhort tied, or ſhrunk up, ſo that it holds the eye ball too hard, or too ſtraight, giving it not liberty to ſtir, and turn from ſide to ſide, or to role about.

A ſeventh defect may be when the eyes look aſquint, as it may do two ſeveral wayes; the one is when the ball of the eye is tied too ſhort, by the nervous ſtring towards the noſe, by which the balls of either eye, are drawn ſo much inward to each other, as to look at each other; but that they are ſome wayes hindered by the noſe, this makes the lines or points; that ſhoot from either eye, to meet acroſſe, which makes all exterior objects to look double; but if the eye ſtring ties the balls of the eyes too ſhort towards the temples it draws the points from the center, and the eyes out of the natural bias which cauſeth a ſide look, as ſeeing two ſeveral wayes at once, but neither way perfectly, by reaſon that the lines that iſſue from the eyes, lie not level, neither can thoſe lines meet upon an object, in a triangular, which joyns

the

ſtopping the ears, or noſe, a ſound, or ſcent can enter; as we may finde by experience; for if any part is bound too hard, it ſtrait becomes numb, likewiſe a violent blow; or when any part is tied too hard, that part becomes numb, the reaſon is, by ſtriking or thruſting back the bloud; for the bloud is like a running company, which when they are forcibly beaten back, on thoſe companies that are thruſting forward, unite by contraction into ſo firm a body, that no particular part can ſtir; which ſolid and thick body ſtops the pores of the fleſh, and the running motions in the veines; but alſo as we give liberty by uniting, or unbinding, or by taking off waight, or by gently rubbing, to open the pores, and diſperſe the bloud, it is cured.

Likewiſe the ſleepy numbneſs may proceed from a ſuperfluity of vapor, which flying to the pores for vent may ſtop the paſſage, by too great a concourſe, being more vapor then hidden vent; but any alteration of motion cures it, by diſperſing the vapor, more thin and evenly.

Chap. 178. *Of the head feeling numb.*

WHen the skins which wrap up the brain, as the *pia mater*, and *dura mater*, are contracted by an inward cold, or an outward cold taken in at the noſe, ears, mouth, or pores of the skin, they ſhrivel, or are drawn in as a handkerchief, or the *like*; when we carry ſome bulk within it, and when thoſe skins are drawn into a ſtraiter compaſs, then the nature is, it preſſes upon the brain, as being too ſtraut, wherein the brain cannot freely move.

Beſides, the veins and little ſmall ſtrings that run about the brain, being contracted with cold, the bloud in thoſe veins cannot ſo freely run, and thoſe ſtrings being ſhrunk, make the brain feel as if it were ſo hard bound, as to be numb; but this doth rather affright the life of the diſeaſed, then deſtroy it; for a little warmth by rubbing the head, or a hot cloth laid on the head, or ſome warm ſpoon-meat cures it.

Alſo numbneſs may proceed from too much bloud in the veins, or too much matter in the nerves, for being too full cauſeth a ſtopping, for want of ſpace or room to move naturally in; but *this* numbneſs is not ſo eaſily cured, eſpecially when the oppreſſions lie in the nerves, for opening a vein gives liberty to the bloud; but I know not how one ſhould ſo eaſily open a nerve, neither is the matter within ſo liquid, as ſuddenly to run *out*; but this numbneſs is rather of the nature of a dead numbneſs, then a ſleepy numbneſs.

Chap.

Chap. 179. *The manner of motion, or diſorder in madneſs.*

THe motions that make that extravagancy we call madneſs, is as a carver, or painter, ingraver, printer, or the like, ſhould place the figures they work, the wrong end upwards; or as if Mathematicians ſhould draw a plat-form, and ſhould make a ſquare where a circle ſhould be, or ſhould put equall weights in uneven ſcales, or ſet falſe numbers, or make falſe meaſure; or as a painter, printer, carver, or graver, ſhould paint, print, carve, or grave, a Coaches head to a Lions body, or if a painter ſhould draw feathers, on beaſts, and hair on birds, or the like; indeed a ſenſitive madneſs, is like dreams in ſleep, onely the ſenſitive motions work in ſleep as I have deſcribed before, on the inſide of the ſenſitive doors; and when awake on the outſide; and in ſleep be wrought, without a pattern; and awake by a pattern from the reall figure, which they preſent; and the differences in madneſs are, that they work be wrought, without the real ſubjects, on the outſide of the ſenſitive doors, as if awake, although there are no objects to take pattern from, as we may perceive by them that are diſtempered, that they ſee ſuch objects that are not preſent, or ſuch as never was, or can be; and ſo the like for ſounds, taſts, touch, and ſmelling, that is, the ſenſitive motions, paints, prints, carves, graves, or the like; as on the outſide of the optick nerve, without a reall pattern; and when the ſenſe works regular, they never draw on the outſide without a pattern, but on the inſide, as in ſleep, and the like for all the other ſenſes: But the motions of the rational madneſs are, when they move violently, and irregularly, if the motions be onely violent, then they fall into violent paſſions; as anger, fear, malice, or loving, hating, grieving, diſpraiſes, and reſolute intentions; if their motions be irregular, then they have ſtrange conceptions, wild fancies, mixt memories, inconſtant and various opinions; if their motions be violent and irregular, they have ſtrong and ſtrange imaginations, high deſpaires, obſtinate and dangerous reſolutions; if the ſenſitive and rational innate matter, ſympathie in violent irregularity, then they will violently talke, laugh, ſing, weep, and ſigh, without reaſon why, or wherefore; but miſtake me not, for when I ſay, too violent, ſtrong, ſwift, weak, ſlow, it is irregular, as to the temper or nature of the figure, but not as to its own nature; as for example, a clock may go too ſwift as to the diſtance of the hour, and yet ſtrike even every nick; and the pulſe may be too ſwift for the natural temper, and yet keep even time: a muſician may play too faſt for a ſolemn tune, and too ſlow for a light air, and yet play right to the notes; as for the irregularity, ſome motions may be too ſwift, others too ſlow, for other aſſiſtant motions,

As on the opticks, or as the drums of the ear, the pia mater, or the skin for touch and taſte.

As to ſee, hear, taſte, touch, ſmell, that which is not preſent, or perhaps not in nature.

motions, as for example an army is to march in a body, and ſome ſhould go, or ride half a day, or a dayes journey before the reſt, and ſome ſhould lag, and come ſlowly behinde, or that ſome ſhould go one way, and ſome another, or as two ſhould carry a burthen, and the hindemoſt ſhould go too faſt for the former, and ſo tumble or throw down, or as horſes in a Coach, the one runs away, and forceth the other to follow, as for diſorder, it is ſomewhat otherwiſe, as tumults and uproars, as ſome doing that which they *ought* not to do, or belong not to them, or inſtead of garding a houſe pull it down, or like thoſe that will make a fire in the midſt of the houſe on a woodden floor, and not in the Chimnie; then there is a diſorder in placing, and matching of parts, and alterations of motions, quite different, from the nature of the figure, for ſome ſort of madnes is made by ſuch different motions, as death from that which we vulgarly call life, that is, the motions, are as different, as ſeveral kindes of figures; for in *this* kinde of madneſſe, they no more know in their fits, or remember out of their fits, what they did, or ſaid, or was done to them in their fits, then if they had been dead; juſt as *in a ſound*, they know not what was done to reſtore them, yet there is not a ceſſation of motions; neither in the ſenſitive, nor in the rational, but an alteration of motion, 'tis true, there is for a time a ceſſation of ſuch ſorts of motion, as belong to the natural health of the figure, but not to the life.

Chap. 180. *Of madneſſe in the body and minde.*

THere are two ſorts different in madneſſe, the one is irregular motion, amongſt the rational innated matter, the other amongſt the ſenſitive innated matter, as miſplacing, *ill* mixing, or miſmixing, or miſtempering, or diſtempering, falſe *carving*, wrong printing off, and on the dull part of matter, as in fevers, or the like diſeales, where the diſtempered matter is miſplaced, by which improper motions, alters the natural motions, which makes the natural temper, and cauſes, and unnatural temper by improper motions; working upon every particular ſenſe, irregularly, or rather improperly, and mixtly, which makes extravagancies both in each particular ſenſes, and in the generality, this madneſſe proceeds from the ſenſitive, and not from the rational innated matter; for the rational part will be in order, and deſcribe diſtinctly what extravagant the ſenſe preſents to them; but this madneſſe of the body is oft times miſtaken, and thought to be the diſtemper of the minde, becauſe the ſick perſons deſcribe thoſe extravagancies by relation, yet oftimes the one cauſeth the other, but not alwayes; for many times the minde will be diſordered when the body is ſound, and healthful, and many times the body will be diſtempered, when the minde is regular and free;

but

but the madneſſe of the body, onely continues to the height of the diſeaſe, and as the diſeaſe abates, the extravagancies vades, and by health vaniſhes away, or rather is rubbed, or worn out, by the Regular, and proper natural motions belonging to that figure, or body, but the madneſſe in the minde proceeds from irregular motions, amongſt the rational innated matter, as when they neither keep time, nor meaſure, not onely in making * figures, but in moving thoſe figures, they make this diſtemper, or rather that diſorder, is altogether in the moving matter, when the other diſtemper is in diſordering the moved matter, for the ſenſitive innate matter may work regularly, according to the nature and ſtrength, but not according to the temper, or degree of the dull matter, nor according to the nature, and property of the kinde, or ſort of figure; but when the ſenſitive, and the rational joyns in conjugal diſorder the minde is ravening as we ſay, and the body weak.

* Figures of innated matter.

Chap. 181. *Madnes is not alwayes about the head.*

MAdneſſe belongs not onely to the head, as that onely the eye, ear, noſe, and mouth, ſees, hears, ſmels, and taſts extravagantly; but every other part of the body that is ſenſible of touch; for extravagant touch, is as much as extravavant ſight, and the like; for touch of the breſt, or any other part of the body, is a ſenſe, as much as the eye in the *head*; thus the body, or ſenſes will be mad as well as the minde, as I have deſcribed in former chapters.

In mad fits.

Likewiſe for the madneſſe in the minde, it is not alwayes bound in the head; for where there are extravagant paſſions in the heart, the minde is as mad, as when there are extravagant imaginations, in the head; for the rational matter, that which we call the ſoul, or minde is as much, and hath as much recourſe to the heart, as to the head, and ſo to the other parts of the body, for any thing I can perceive.

But that matter I call the rational and ſenſitive ſpirits, * which others call the animal, and vital ſpirits; perchance fools may think me extravagant for giving the matter other names; but I was forced to take theſe names, becauſe they were more ſignificant to the ſenſe of my diſcourſe; beſides, perchance they may think, when I ſpeak of rational and ſenſitive ſpirits, that they are hobgoblins, ghoſts, or viſions, ſuch as nurſes fright their children with, or ſuperſtitions, or as the wiſer ſort doth to make credulous fools beleeve to keep them in awe, knowing they are apt to diſorders.

* If I miſtake not.

Chap. 182. *Muſick may cure mad folks.*

THere is great reaſon why Muſick ſhould cure madneſſe; for this ſort of madneſſe is no other but the ſpirits that are in the brain and heart put out of their natural motion, and the ſpirits having a natural ſympathy with Muſick, may be compoſed into their right order; but it muſt be ſuch Muſick, as the number of the notes muſt goe in ſuch order as the natural motion of the brain, though every brain hath not one and the ſame motion, but are ſet like notes to ſeveral tunes: wherefore if it were poſſible, to ſet notes to the natural motion of the heart, or that brain that is diſtempered, it might be perfectly cured, but as ſome notes do compoſe the brain by a ſympathy to the natural motion, ſo others do make a diſcord or antipathy, and diſcompoſe it, putting the natural motions out of tune.

Thus much for the ſenſitive Maladies.

Chap. 183. *Of the fundamental diſeaſes, firſt of fevours.*

THere are many ſeveral ſorts or manners of fevors; but I will onely treat of the fundamental fevours, which are three, *from* which three all other fevors are partly derived; the firſt is a malignant fevor, the ſecond the hective fevor; and the third the ordinary burning fevours; the firſt is catching, and often deadly, the ſecond is never catching, but alwayes deadly; the third is neither catching, and ſeldom deadly; the firſt proceeds from violent diſordered motions, and diſtempered matter, and humour.

Which is corrupt humors.

The ſecond from ſwift motions, which diſtemper and make waſte of the matter, which matter, I mean the ſubſtance of the *body*.

The third is too violent motions on well tempered matter.

As a ſound body.

And theſe three ſorts of fevours are often mixt, as it were a part of all mixt into one; but a high malignant fevor, is a ſudden uſurpation; for the diſordered motions joyned with a miſtempered matter, which is corrupt humours, ſurpriſe the body, and deſtroy the life therein, as we ſhall ſee in great plagues, the body is well, ſick, and dead in a moment; theſe or the like diſeaſes are cauſed after three manner of wayes, as being taken from outward infection, or bred by an evil habit in the body, or by taking ſome diſagreeing matter therein, which cauſeth a war of ſickneſſe; for upon the diſorder which the diſagreeing matter makes, the natural motions belonging to the body grow factious, and like a common rout ariſe in an uproar, which ſtrives onely to do miſchief, ſtopping ſome paſſages that ſhould be kept open, and opening

Surfets, or unholſom meats.

 ſome

ſome paſſages that ſhould be kept ſhut, hindring all regular motions, from working after that natural manner, forcing thoſe they can over power, to turn rebels to the life of the body.

The ſtronger motions over power the the weaker

For it is againſt the nature of the innated matter to be idle, wherefore it works rather irregularly then not work at all, but as long as a body lies ſick, the power is divided, one part of the innated matter working irregularly, the other according to the natural conſtitution, which by the regularity, they ſtrive to maintain the chief ſorts of life which are the vital parts, eſpecially the heart, and diſordered motions ſtriving to take, or pull them down, making their ſtrongeſt aſſaults thereon; for the diſordered innated matter makes out-works of corrupted matter, ſtopping as many paſſages as their power will give leave, ſo ſtriving either to ſtarve the vital parts, or to oppreſſe them with corruption, or to burn them by their unnatural heat they make in the body, or to drown them with watriſh humor which is cauſed by the diſtemper of ill diſgeſtions, *and* obſtructions; the regular innated matter, ſtrives to break down thoſe works, and to caſt, and expel that filth out of the body, and according as each party gets the better, the body is better or worſe, and according as the ſiege continues, the body is ſick, and according as the victory is loſt or won, is life or death.

Some dayes the body is better then others, ſo in an hour or half an hour.

Chap. 185. *Of the infections of animals, Vegetables, and elements.*

Such motions as corrupt animal bodies, corrupt vegetable bodies, and as corrupt and malignant air is infectious to animals, ſo likwiſe to vegetables, and as malignant diſeaſes are catching and infectious, to thoſe that comes neer them, ſo oftentimes vegetables are infectious to animals, as herbs and fruits, which cauſe ſome yeers ſuch dangerous ſickneſſe and killing diſeaſes to thoſe that eat thereof; likewiſe thoſe bodies that are infected do infect ſound, and nouriſhing food, when once it is eaten, cauſeth that which is good alſo malignant when once in the body.

Chap. 186. *Of burning fevers.*

ALL burning fevours for the moſt part, are produced from the vital ſpirits, as when they move irregularly, they corrupt the natural humours which cauſe a diſtemper of heat in the body moving towards expulſions, which are dilation; and when they move with ſupernatural quickneſſe after an extenuating maner, they inflame the body in either cauſes, emptying the body, and quenching the fire is to be put in execution, for the emptier the body is, the leſſe humours there will be.

Likewiſe

likewiſe leſſe motion, as having leſſe matter, for in matter motion lives, likewiſe the leſſe cumbuſtible matter there is, the ſooner the unnatural fire will be quenched, unleſſe that the fire be in the arteries, then it is like a colepit ſet on fire, wherein there is no quenching it, unleſſe you drown the coles, ſo when the unnatural heat is in the arteries, you muſt drown the life of the body, like the cole in the pit before you can quench the fire; but a patient may be eaſed, & ſomwhat prolonged with cooling brothes, and quenching julips, for though they cannot enter the arteries, yet they may keep the outward parts cold and moiſt, which may caſt cold damps quite through the body, but in this caſe all evacuations are dangerous, for the more empty the body is of humour, the ſooner the body is conſumed, for the humours ſerve as oyl, and though they flame, yet they keep in the light of life; in all other fevours evacuations of all ſorts are good, for if it be ſome melancholy pitch humours that are ſet on fire in the body, or ſome ophi cholerick humours, it is but quenching it with cooling julips, without any hurt to the body, and if it be a brandy blooddet on fire, it is but drawing it forth by broaching ſome veines, and the body will be ſaved from the deſtruction.

Chap. 187. *The remedies of Malignant Diſeaſes.*

IN malignant diſeaſes expelling medicines are beſt, which expelling medicines are not hot, and dry medicines, for all drugs that are naturally dry, have a contracting quality which is an utter enemy in this diſeaſe, for they muſt be dilating medicines, and all dilating medicines have a fluid faculty working after the nature of a flowing tide, which is thruſting, or ſtreaming outwards, as to the circumference, and the operations of dry medicines, are like the ebbing tide that draws backward or inward, as to it ſelf; but as I ſaid before, that all hot and dry medicines have a contracting quality, which contractions draws or gather up the malignity, as in a bundle or heap together, and if it be a fiery contraction, it ſets it on a fire, which burns out the life of the body; for fire makes no diſtinguiſhment of good or bad, but deſtroyes all it can in compaſſe, ſo as it will not onely burn up the ſuperfluities, or corruptions, but ſuck or drink up the radical moiſture, or charcoales, the vital parts, and conſumes the animal life. Wherefore dilating medicines, muſt be applied in theſe diſeaſes, but not ſtrong expulſives medicine, by reaſon the malignity is ſo intermixt, or ſpread in the body that ſtriving with a ſtrong force to caſt forth the malignity they ſhould caſt forth the nouriſhing and conſiſtent matter, for the malignity, and corrupt humours being more ſtrong, having a greater party, can reſiſt with more ſtrength the force of expulſion then the nouriſhing,

As hot and dry Cordials.

conſiſtant part can being weak, ſo that the expulſions give ſtrength to the malignity, or corrupt humours, by taking away the pure, and well tempered matter; but letting blood in theſe diſeaſes ſhould be excellent good, for bleeding is rather of the nature of ſweating, then of purging; beſides, it will draw the malignity more from the vital parts into the veins, for the veins having a natural quality or faculty to draw, and to ſuck into them, will draw, and ſuck in that which doth moſt abound, ſo as it is but ſtill letting blood as the malignity is drawn in, for it is better to let out the blood, then endanger the vital parts, by keeping it in, for if moſt of the blood ſhould bee let out there will freſh blood increaſe in a ſhort time, but if the vital parts be never ſo little corrupted, or putrified or waſted, we cannot heale or make up thoſe parts again.

As to draw every day an ounce, or two as long as the violence of the diſeaſe laſts.

Chap. 134. *Diſeaſes cauſed by conceit, or cured.*

AS for the Producing diſeaſes by conceit, is thus; the vital ſpirits which are the motions of life, have an abſolute power over the body, as working every part thereof, and therein, ſo the animal ſpirits which are the motions of the mind create imaginations, and conceptions, and the animal ſpirits and the vital ſpirits being as man and wife, the animal as the husband, the vital ſpirits as the wife, whereupon the animal ſpirits many times beget that diſeaſe it figures which is an imagination, and the vital ſpirits brings that childe forth, being like the figure the animal ſpirits made, that is, the vital ſpirits oft times work ſuch motions as makes ſuch diſeaſes, wherefore the animal ſpirits work thoſe motions into imaginations; and to prove it, thoſe that conceit they ſhall have the ſmall pox, meaſels, pleagues or the like, moſt commonly they fall ſick of that diſeaſe, although they come not neer the infection; and to prove the animal ſpirits which is the minde, works the ſame motions by an imagination as the diſeaſe is, that thoſe which conceit a diſeaſe, do not fall ſick of any other diſeaſe but the ſame they imagine, and the reaſon why theſe malignant diſeaſes are produced oftner by imaginations then other diſeaſes, is, that thoſe diſeaſes are dangerous, or that they are apt to deform which makes a fearful conception or imagination, to work more ſtrongly; for did the imiginations work as ſtrong to other diſeaſes as to theſe, they would produce the ſame effects: As for thoſe which are cured by conceit, is when the motion of the animal ſpirits works ſtronger then the vital ſpirits, which cauſeth the vital ſpirits to alter thoſe motions that made ſuch diſeaſes; but thoſe effects are produced but ſeldom, by reaſon that the animal ſpirits ſeldom work ſo ſtrong imaginations, for it requires a double, or treble ſtrength to reſiſt or alter the force another way, which muſt be to cure a diſeaſe after this manner, then to joyn and aſſiſt, as in the producing

I meane there interior ſtrength.

ducing a diſeaſe; for when the imagination produceth a diſeaſe, the vital ſpirits joyn with the animal, but when the diſeaſe is cured by imagination, the animal ſpirits takes the animals from their work; but a great fright, or a ſudden joy is a good remedy in ſome diſeaſes, by reaſon thoſe paſſionate motions are ſtrong, and violent, yet they can cure onely looſe diſeaſes, not ſuch diſeaſes as are rooted, or fixt, for then the vital ſpirits are not to be altered by the animal.

Chap. 188. *Of the expelling malignity to the outward parts of the body.*

THe reaſon why malignant diſeaſes, as the plague, or purples, or ſmall pox, meaſels, or the like; there break forth ſpots, ſwelling ſcabs, or whelks, is by the power of expelling motion; But the reaſon why it ſticks in the fleſh, and *not* quite out, is, becauſe the irregular motions that maintain the health and ſtrength of the body, are oppoſed by diſorderly motions, which makes corrupted matter, that makes diſordered motions; for though there can be no corrupted matter, but what is cauſed from diſordered motion, yet when the humors of the body are once corrupted, the motions are more violent; again, ſuperabundant humors, cauſe diſordered motions; for as there is too much humor, obſtructing the body therewith, ſo there is too much motion, to work regularly therein, and being againſt the natural conſtitution to have ſo much humor, and motion, it produceth violent ſickneſs, working to the deſtruction, and not to the maintenance of the body; *but* the regular motions, which are digeſtive motions, which unites, ſtrengthens, and defends the vital parts, by attracting good nourishment, by retaining the uſeful parts; by concocting it into a ſolid ſubſtance, by expelling of ſuperfluieties, or malignancy out of the body, after a methodical manner, and according as the ſtrength of expelling motions are, ſo is the malignity, caſt forth, for if the repelling motions be ſtronger then the expelling motion, the malignant preſſes ſo hard upon the vital parts, as it ſmothers the life therein, or burns up the materials thereof; Again, the expelling motions may be ſo *weak*, as they cannot thruſt out the malignity ſo far as the circumference of the body which is the skin, or if ſo far, yet not to ſtay there ſo long, as to evapor it out, and then the malignity fals back with a greater violence; for what is forced, and reſiſteth, when once it hath liberty, or gets power, it becomes more violent, by how much more it were forced; but that malignity that doth evaporate forth, doth inſenſibly enter into the next body it meets, entring through the noſtrils, mouth, or pores of the fleſh; and thus many times, from animal to animal untill there is a general infection, which is a general diſorder, for the malignity that enters in by infection, is like a foraign

foraign enemy, which enters into a peaceable country, which not onely diſorders it, but makes havock and waſte, and many times utterly deſtroyes it, but when a malignant diſeaſe is bred in the body, it is like a civil war, where uproars are raiſed, and outrages are done, by inbred corrupt humors; but when malignant or other diſeaſes are caſted by furfeits, it is like a deluge of fire or water, that either drowns, or burns up the the kingdom of the body; where ſometimes it is ſaved by aſſiſtant * medicines, and ſometimes it is ſo furious, as nothing can help it.

* As by letting bloud, or the like.

Chap. 189. *Of Sweating diſeaſes.*

ALL ſweating diſeaſes are caſted by ſuch kinde of extenuating motions, as melt metals, and not by ſuch kinde of exhaling motions, as evaporate water, for the evaporations of the watery part of the body breath forth in inviſible tranſpirations, as breathing through the pore like a thin air; but ſweat runs through the pores (as bloud out through gutters of earth; but ſweats are good or bad for the body according to the matter of humors that are melted out; as for example; I will compare the humors of the body to ſeveral metals, as Iron, Lead, Tin, Copper, Silver and Gold; Iron is melancholly duſt; Lead is cold, and dry or cold, and moiſt melancholly; Tin is flegm; Copper is choler; Silver is the radical humor; and Gold is the vital ſpirits: Theſe humors muſt be proportionably tempered to make a healthful body; there muſt not be too much ſcarcity of Lead, Tin, or Copper, for the Silver or Gold, but unleſs there be ſome, they will not work; like as coyn, it cannot be wrought, or formed without ſome allay, and if the allay be too much, it ſpoiles the coyn.

Likewiſe there muſt be ſo much heat in the body onely as to compound theſe humors, not to melt them out by ſweats unleſs they ſuperabound; and for this Phyſitians muſt onely have a care to melt out that humor that ſuperabounds, for if the radical humor ſhould be melted, or the vital ſpirits, it deſtroys the body by waſting the life.

But in ſome caſes ſweating is very beneficial to the body, as in great colds, which have knit up the pores or paſſages of the body, or in great furfeits, or in malignant diſeaſes, which help to expel the poyſonous humors or corrupted humors in the body, or melt the Icy humors congeal'd by cold; but thoſe ſweats that are beneficial, and wholeſome for the body, the body will be much ſtronger, and agiler, and the ſpirits quicker, and livelier,; but thoſe ſweats that are pernicious to the body, the body will be faint and weak, after they have ſweat; but in theſe diſeaſes, a phyſician muſt be very careful, when he puts a patient in a ſweat, as to give ſuch medicines as will work upon

on that humor, he would have ſweat forth, but in ſweating diſeaſes, as when the body ſweats too violently, like as in great and dangerous fluxes, which are not to be ſtaied by ordinary means, for although in theſe diſeaſes, there muſt be uſed contracting medicines, yet ſome ſweats require hot contracting medicines, others cold contracting medicines, and thoſe medicines that are applied, muſt be applied gently, and by degrees, leſt by a ſudden contraction they ſhould ſtop the pores of the body too much, which are the doors to let out the ſmoak in the body, aswell as the ſweat of the body, or by too haſty contractions thoſe paſſages ſhould be ſhut, that ſhould be kept open, or thoſe to be kept opened that ſhould be ſhut; but phyſicians will gueſs by the patient, what humor they ſweat forth; for cold ſweats are from melancholy, clammy ſweats from thick flegm; hot burning ſweat from choler; cold faint ſweats proceed from the radical humor; hot faint ſweats from the vital ſpirit.

Chap. 190. *Of Surfeits.*

SUrfeits are ſuperfluities; as too much heat, or too much cold, or when there is taken into the body too great a quantity of meat, or drink, or the like. Likewiſe when the nature of the meat is diſagreeing to the nature of the body; where one ſcruple will be too much, as being ill, which will give a ſurfeit, for ſurfeits do not onely oppreſs by the ſuperfluous quantities of matter, but diſturb by the ſuperfluous motions, the diſagreeing matter cauſing more motion, then naturally belonges to a healthful body: Beſides, like a company of rude and unruly ſtrangers diſturbs and hinders the irregular motions, altering the natural conſtitutions, and uniformity of the body, and many times ruines the body, unleſs an aſſiſtant medicinable matter is brought to help, to expel the ſuperfluous, or that the natural expulſive motions in the body, are ſtrong enough, to throw out that ill matter, either by vomit, or ſtoole, or other evacuation; but many times the ſuperfluities become ſo ſtrong, not onely by their own ill nature, or great quantity, but by making a faction; And ſo begetting a party amongſt the natural motions, which makes ſuch a general diſorder, that though the natural digeſtive motion, and the natural expulſive motion joyn with the like aſſiſtant motions taken in medicines, yet the body ſhall be ruinated, and life caſt out, by that matter, and theſe motions that are their enemies therein.

Chap. 191. *Of Conſumptions.*

ALL Conſumptions are cauſed by an unnatural expulſion, cauſed by miſtempered matter, or miſtempered matter cauſed by unnatural motions, ſuch as work not to the ſubſiſtance or health of the body; which after they have corrupted the matter, they turn to expulſions, throwing all out of the body; but if they be onely exterior expulſions, they onely untile the houſe, that is, they do unflesh the body; but if they be interiour expulſions, they do not onely unflesh the body, but rot ſome part in the body; and if the unnatural expulſions be amongſt the vital parts, which are the foundations of the life of the body, the whole fabrick of the body fals without redemption, and the materials go to the building of other ſimples.

Yet it is firſt cauſed by other diſtempered motions, before they come to be diſtempered expulſions.

But if they are hot expulſions, cauſed from a thin, ſharp, ſalt humor, there muſt be applied cold contracting medicines; and if they be cold expulſions, there muſt be applied hot contracting medicines.

There are hot expulſions, and cold expulſions, and hot contractions, and cold contractions.

All cold expulſions are, when the parts are tender, weak and raw, and undigeſted; and hot expulſions are, when the parts are burnt, or ulcerated; for all hot expulſions work upon the parts of the body, as fire on wood when they are burning expulſions, or elſe like as fire doth on metal, melting them into a liquid ſubſtance; and cold expulſions work upon the parts, as when clouds beat [illegible] into ſhowers of rain, or flakes of ſnow, breaking or [illegible] thoſe clouds into ſmall parts, ſo that the dropical [illegible] ariſeth from hot conſumptions, are onely liquid [illegible] metal; and the dropſie [illegible] that ariſeth from [illegible] conſumptions, is as a watery floud; but as I ſaid, in all [illegible] tions the remedies muſt be contractive, or at leaſt rete[illegible] becauſe the nature of all conſumptions are expulſive, but y[illegible] or the moſt part of phyſicians, finding their patients to b[illegible] and dry, give all dilative medicines, as if the parts were [illegible] gathered into a leſs compaſs; but the truth is, when ſo much of the natural bulk of the body is leſſened, ſo much of the body is waſted: I will not ſay but theſe unnatural expulſions might proceed from unnatural contractions, like as when any thing is made ſo dry as it moulders into duſt, but when it comes to that degree, it expulſes; ſo whenſoever the body is in a conſumption, the motions therein are expulſive: I do not mean by ſiege or vomit, although they will ſpit much, which is a kinde of vomiting, but they waſte by inſenſible inſpirations; but all purging medicines are an enemy to this diſeaſe, unleſs they be very gentle; for though purging medicines do not expulſe, after the nature of conſumptive expulſions, yet if they be ſtrong, they

may

may in some kinde assist the consumptive expulsions, neither is much amisse blood good in these diseases; yet a little re-trethes, doth tempers the body; for in these diseases physitians must do as Chirurgions when they cure wounds, they first cleanse the sore or wounds, taking away the putrified matter gently with a probe, and then lay a healing plaister, so Physitians must gently purge and bleed the patient, and then give them strengthening and nourishing remedies: again many Physitians have a rule, that when they perceive their patient to be exteriorly dry, that is, outwardly dry, they think them hot; but it doth not follow that all drouth proceeds from heat, for there are cold drouths as well as hot, so that a Physician must warily observe the patients drouth, whether it proceeds from cold or heat, or whether the drouth proceeds for want of a sufficient quantity of matter, for the body to feed upon, or that the matter which properly should be porous and spungy, is contracted into an unnatural solidity, and though the interior nature of drought is made by contraction, yet the exterior motions may be expulsive; as for example, if any thing is dryed to that degree as to fall into dust, although the interior be contracting, that caused it to be so dry, yet the exterior motions are expulsive, that causeth it to fall into parts; but the drouth of consumptions doth proceed most commonly from a scarcity of nourishing matter that should feed each part of the body, for the principal and consistent parts being distempered, cannot digest so much as will feed the hungry members therof; but as I have said before, that all consumptions are wrought by expulsive motions, for what is contracted, is not consumed, nor doth consume untill it expulses, but those bodies that are lean or dry by contra-ctions, are not in consumptions, for nothing is w[illegible]ely [illegible]ion, a[illegible] extention [illegible] the body are [illegible] to a [illegible] pray mi-[illegible]me not, [illegible]one and the same innate matter may [illegible]w weaker, as to abate of such or such a kinde of motion, so increases stronger and stronger, according to the quantity, as to other motions. But as I said before, that innated matter in such diseased bodies, turns from contracting to dilating, turning by degrees from one to another, and then the dilations work more and more, extending more and more in such circular motions as produce water; for when it comes to such a degree of extention, it is become from being solid to be lesse hard, from being lesse hard, to be soft, from soft to be liquid, from liquid fluid, and when it comes to such a degree of a fluid extention, it turns wet, and when it is soft, liquid, fluid, and wet it is turned to that we call water; for oyl, though it be soft, liquid, and fluid, yet it is not absolute wet, it is rather moist then wet: for there is a difference between moist and wet, or glibby and wet, or glibby and moist, so that oyl is a glibby and moist body, rather then a soaking wet body;

As witnesse the frost and ice.

but

The like of other kinde of motions.

differ, ſo the diſeaſes differ, for there ... different ... tions, and ſeveral ſorts of expulſions, ... kindes ... the manner of working, as if they ... motions, but ſome dropſies proceed ... many ... from cold dilations, and ſome proc... too ſtrong geſtive motions, that is, when there are ... diſgeſtive motions in the body; for ... then the body diſgeſts ſo faſt, as makes more ... makes the ſeveral parts can feed with tempera... ous, or elſe reignes, and the reſt of the ſucking p... us, for by rea- thoſe many diſgeſting ... ing matter too ſon they cannot be idle, they work the ... ſhould be ſo of- fine, or too thin, for proper ... as; as if flo... mp, or batch for ten bolted, that it could not work into a ... ght upon ſo much, as to become liquid, as ... o oyl or water.

Other dropſies proceed from the weakneſſe ... of diſgeſtion, thoſe ...otions being not ſtrong, or ſufficient to ... work all that is brought into the ſtomach; whereupon that ... uperfluous matter corrupts with diſtempered motions, and wh... n it comes to be corrupted, it either dilates, or expulſes, if it ... onely dilates, it turns to water, if expulſive, it caſts forth, eit... er by vomit or ſtool, or elſe lies to corrupt the principal par... s in the body, which when they are joyned together, expull... life by their treacherous uſurpation.

Other dropſies are cauſed by too weak contra... cting motions, cauſing that to be tender that ſhould be ſolid, ... or thoſe parts looſe that ſhould be firm, as not contracting ... hard enough. As firſt contracting into Chylus, then into blood ... then harder, for fleſh, and harder for nerves and bones; t... e contractions gro... ker and weaker, until they becon... e of no... and ... turn to dila... or exp... s; bu... the dimen... leſſer, compaſſe; Thus, as I have ... ans, alt... they miſtake not the diſeaſes, yet they may eaſily miſtake ... manner of the diſeaſes, for one and the ſame kinde of diſeaſes may move after divers manners in ſeveral bodies, and in one and the ſame body.

Chap. 192. *Of dropſies.*

MOſt dropſies are ſomething of the nature of conſumptions, as being in the way to conſumptive expulſions, for they dilate after that manner, as the other expulſes, eſpecially if they are dropſies, which proceed from corrupt parts, and then they turn to conſumptive expulſions, and the onely difference in moſt dropſies, and conſumptions, is, that dropſies as long as that diſeaſe laſts, the motions in the body are moſt dilating, which is in a degree to expulſion, and when it comes to a conſumption they are all expulſions, but as the motions

but when this watry extenuation extenuates beyond the degree of water, they turn to vapour, which cauſeth the diſeaſed to be puſt or blown like a bladder, rather then ſwell'd out, as we ſhall perceive that a little time before the patients fall into a conſumption, they will be ſo puft out, as their fleſh will be like a fire-bal, the next degree they fall into a fiery extenuation; For when the humour extenuates beyond vapor, which is a kinde of an aire, then it becomes hot like fire, which is a hective fevour, and when the humour hath extenuated to the farthelt degree, it expulſes, and ſo pulls down and throws out the life of the diſeaſed; but in the hidropical diſeaſes, there muſt firſt be applied attractive medicines to draw out the watry overflowing, by iſſues, cupping-glaſſes, or the like, then there muſt be applied expulſive medicines as purgings, and bleeding, and ſweating, yet they muſt be gently applyed, for fear of weakning the body by drawing out the humour too ſuddenly, then there muſt be applied contracting medicines to draw into an united ſubſtance, as to gather or draw up thoſe parts that have been made looſe, porous, and ſpungie with the diſeaſe, then they muſt be applied retentive medicines, to confirm and ſettle them, after their natural manner, or form, then laſt there muſt be applied diſgeſtive medicines to reſtore what is waſted; but if any of the principal parts be impaired, waſted or expulſed: they neither can be reſtored nor mended, but by a new creation, which uncreating braines perhaps conceive not but I muſt intreat my readers to obſerve, that ſome ſorts of motions begin a diſeaſe, that is, they lay the foundations thereof; and other ſorts of motions work upon thoſe foundations.

See in the chap of extenuations of water.

Chap. 193. *Of apoplexies.*

SOme ſorts of apoplexies are cauſed by an inbred ſuperfluous water, in the [illegible] which being congealed by cold contraction, falling to the hinder part of the head, which is the hinder part, it ſtupifies the ſenſes, ſtopping the natural motions as a flowing river, that is turned into ice; but thoſe ſorts of apoplexies are curable, if aſſiſtance be taken in time, which is by hot dilating medicines, not onely to ſtretch out the icy contraction, but to expell that cold watry humour by a rarification, but if the apoplexie be cauſed by an inbred ſlime, as phlegme, which is of a thicker nature then water, and is become cruſted or peterated by hot contractions, it is ſeldom or never cured, no more then brick which is once baked by the ſun, or in a fire, can be made to ſuch clay as it was before it was burnt; But miſtake me not, for I do not mean the humour is as hard as ſtone, or brick in the head, but ſo hard, as to the nature of the brain, that is, the phlegme is grown ſo dry and tough, as not to be diſſolved, ſo ſoon as the nature of the brain requires it,

for though flegme will be contracted into ſtone, as in the bladder, and kidnies, yet not in the brain, by reaſon the nature of the brain is ſo tender, and ſo ſenſible, as it cannot indure ſo ſolid a ſubſtance therein, nor ſuffer ſo long a time as the humour will be penetrating to ſtop the paſſages to the brain, not but thoſe kinde of motions that produce ſtone, may be ſo ſtrong and ſo ſwift as to turn matter into ſtone immediately; but I do beleeve not in the animal bodies, for they are too weak figures for ſo ſtrong motions to work in; but as I ſaid theſe hot or cold contractions, for both ſorts of contractions produce ſtone, ſo both ſorts of contractions make tough, clammy, cruſted, hard flegme, which is ſome degree towards ſtone, flegme if it ſtop the paſſages to the brain, it cauſeth an apoplexie; but the reaſon why the watry contractions are more apt for cure, is, becauſe the nature of water is fluid, and is eaſily diſſolved by dilations, having interior nature to extenuations; but ſlime, and flegme are more ſolid, and ſo not ſo flexible, to be wrought upon, as ſuddenly to change ſhape, or nature, in being diſſolved or transformed.

The third cauſe is a fulneſſe of blood, or a thickneſſe of blood; for when the veins are too full, there is not vacuity enough for the blood to run, ſo ſtops the motion thereof, or if the blood is too thick, or clammy, it becoms leſſe fluid, and the more ſolid it is, the ſlower the motion is, and though the blood may have too quick a motion by reaſon of heat, ſo it may have too ſlow a motion by reaſon of thickneſſe, and if the veines are filled too full of hot blood, wherein are many ſpirits, it endangers the breaking ſome of the veines, like as when ſtrong liquor is put into a barrel, if it be filled too full, the ſtrength of the ſpirits ſtriving for liberty, break the barrel; the like will the blood in the veins, and if a vein chance to break in the head, it overflows the brain and drowns the life therein.

The laſt is groſſe vapors which aſcend from the bowels, or ſtomack, which cauſeth ſo great a ſmoak, as it ſuffocates, or choaks the brain, ſmothering out the life of the body.

All apoplexies are ſomewhat of the nature of dead palſies.

Chap. 194. *Of Epilepſes, which is called falling-ſickneſſe.*

THis diſeaſe is cauſed by a water in the brain, which water is moſt commonly green, like ſea water, and hath an ebbing and flowing motion, like the tides thereof, and when the water is at full tide, on the forepart of the head, it takes the diſeaſed after the manner of panting, and ſhort breathing, beating themſelves, and foaming at the mouth, neither can they hear, ſee, ſmell, nor ſpeak; the reaſon is, that the flowing motion driving the watry humour ſo far out, as it extends the *pia*

mater

mater, and dia mater of the brain, farther then the natural extention; which extention ſwelling out towards the outward part of the head, hinders all recourſe, ſtopping thoſe paſſages which ſhould receive the objects, through the exterior ſenſes; and the froth or ſlimy humor, which is betwixt the skin, where the brain lies; and the skull being preſſed out, fals through the throat into the mouth, and there works forth like yeaſt, which is called foaming; but though the motions of the head are thus altered for a time, ſo as there is neither ſenſe nor rational knowledg, yet the body may be after the natural courſe, and not any wayes altered; but the body feeling life oppreſt in the head, the ſeveral parts or members in the body, ſtrive and ſtruggle with what power and ſtrength they have to releaſe it: Like as a loyal people that would defend or releaſe their natural and true born [illegible], from being priſoner to a foraign enemy; but [illegible] flows to the hinder part of the head, the pia [illegible] mater, extending out that way, ſtops all the [illegible] which ſtopping, it ſtops [illegible] reaſon that place [illegible] and when th[illegible] lies as in a [illegible] motion, bu[illegible] to recover [illegible] is at full ri[illegible] der part, [illegible] then othe[illegible] and accou[illegible] are ſtrong[illegible]

Like[illegible] heart may produce [illegible] ward, or green thin h[illegible] parts of the body, into t[illegible] this of the head and the heart; and this kinde of water or [illegible], if it be in the nerves, cauſeth dangerous convulſions, b[illegible] of the ſharpneſs that thrivels up the nerves; and when [illegible] the bloud cauſes the veins to contract, through the fa[illegible]n, if in the ſtomach, it cauſes vomiting, or great fluxes [illegible] dividing the humors; and the ſharpneſs, prickling or [illegible] the ſtomach, provokes a ſtraining, as tickling in the nos[illegible] ſneezing; ſo the ſtomach, either to ſtrain upwards or downwards.

Chap. 195. *Of ſhaking Palſies.*

SHaking palſies proceed from a ſupernatural extenuation in the nerves, which by the extenuating becomes more porous and hollow, and becomes like a perpetual earthquake, having a flatuous or windy humor in the bowels thereof, and cannot finde paſſage out, if it proceeds from a hot extention, there muſt

muſt be applied cold condenſing medicines; If by a cold extention there muſt be applied hot condenſing remedies.

Chap. 196. *Of Convulſions, and Cramps.*

CONvulſions proceed from contrary contracting motions, quite from the natural motions of the body, as winding up the ſinews, nerves, or veins; but eſpecially thoſe ſinews, which joyn, and impair the muſcles together, drawing not onely contrary, but contracting ſeveral wayes, and after divers manners; for ſome time the nerves are as if we ſhould tie ſtrings in bowt-knots, others as if we ſhould winde up Lute ſtrings on pegs; and ſome are twiſted like whip-cord, and many the like wayes, which would be too long to recount, but theſe contractions proceed either from a winde got into the nerves, or veines, which troubles them as the winde-cholick doth the guts, or a ſharp hu[mor] ivels them together, or as ſalt watery humor, m[ixed] which ſtrugling and ſtrivin[g] wi[th] les up the nerves, [hu]mor, which *draws* all ſpungie bodies, ſſages, which f the *humor* if the bloud windy, or ter, or the s, and ex- after, oyl lt, ſharp, rves, *it is* , neither rves, as into the veins; y be eaſily cured, by melt- table warmth, or violent heats from the hot cordial me[dicines], which ſpread about the body, as a great fire in a chi[mney] which ſpreads about and hears all the room, if the fir[e in the] himney be anſwerable to the bigneſs, or largeneſs of th[e room] it is in, and the leſſer the room is, and the bigger the fir[e is] hotter it is; wherefore it is to be conſidered, that thoſe [that] re at full growth, or are larger of body, if thus, the diſe[aſe] ought to have a greater proportion, or a larger quantity of thoſe medicines, then a childe, or thoſe that are but little of ſtature, for though thoſe that are of little ſtature may be more ſtronger then thoſe that are of a far bigger bulk, yet in the cauſe of diffuſing or dilating medicines, the circumference of the body muſt be conſidered, as well as the ſtrength of the medicines; and if the convulſion be in the ſtomach, cauſed by the aforeſaid humor; purging medicines or cordials may cure it, unleſs the ſtomach is gathered, ſhrivell'd, or ſhrunk up by an unnatural contracting heat,

his are repe-
ted.

heat, like as leather that is put into the fire, which when ſo, the ſtomach can no more be cured then leather to be made ſmooth, which is ſhrunk up in a purſe, by fire; after the like manner as convulſions or cramps, but cramps moſt commonly are only contractions of the ſmal veins, wch tie or twiſt them up, & many times ſo hard as they break; for thoſe that have been much troubled with the cramp, wil have all the skin, where the cramp hath taken them all ſtretch'd with broken veins; I mean the ſmall hair veins, but rubbing the part grieved with a warm cloath, will untie and untwiſt them again, by diſſolving the cold, or diſperſing the winde, or rarifying the bloud therein, this we finde by experience; wherefore I ſhould think that in convulſion fits, that are cauſed by the like, that if the diſeaſed ſhould be rubbed with hot cloaths, outwardly applied, as well as hot medicines inwardly taken, it may do the patient much good. But I muſt remember my Readers, that in Convulſions, the ſtrength of the medicines inwardly taken, muſt be according to the ſtrength of the fits; for if they be ſtrong fits, weak medicines do no good; for more ſtrength goeth to untie a hard knot, then a looſe knot, or to untwiſt a hard ſtring, then a looſe ſtring; beſides, it is hard to know after what manner the knot is tied or twiſted, and many indeed are ſo ignorant of medicines, as the manner of the diſeaſe, to apply ſuch as ſhall hap of the right end, as thoſe which are cured by chance, and chance hits ſo ſeldom right, as not one of an hundred eſcapes of theſe kinde of diſeaſes, if the diſeaſe is any wayes violent, for then the motions tie ſo faſt, and ſo ſtrong, as they break the life of that figure aſunder. There be natural contractions, and unnatural contractions; that is, proper or improper to the health of the figure.

Chap. 19[illegible] Of Collicks.

ALl Collicks are towards the nature of Convulſions, or at leaſt Cramps.

Some Collicks proceed from raw undigeſted humors. — Winde Collick.
Some from ſharp melancolly humors.
Others from cold flegmatick humors
Others from hot cholerick humors. — A bilious Collick.
Others from putrified humors.

Some Collicks are in the ſtomach; others are in the bowels, as the guts; ſome in the ſides, and ſometimes in the veins; but thoſe Collicks are Cramps; but the cauſe of all Collicks are by extenuating motions, though the effects are oft times contracting, but if the cauſe be contracting, it is a Cramp, not a Collick, for a Collick is properly winde, produced from the aforeſaid humors; that is, when thoſe humors extenuate farther then a watry extenuation, which turns into vapor or winde, which vaporous winde, or windy vapor, ſtriving to get vent, being ſtopped by groſſer vapor, or thicker humor, runs

Cramps oft times taken for Collicks.

runs about in croſs motions, which cauſe pain; for the extenuating motions thruſting outward and the reſiſting motions thruſting backward, run croſs, or bear on each other, which cauſeth pain; and as long as the ſtrife laſts, the body hath no eaſe, until ſome aſſiſtance in medicines be given, or that it can overmaſter the reſiſtent motions; but when once it hath liberty, it flies out in expulſive motions, at all vents; but if the extenuating humors are broke, or diſſolved in the body, by the well tempered motion therein, or expulſing of its felf, it evaporates through the pores of the body in inſenſible tranſpirations; but if the extenuating can finde no way to be expulſed, it gathers inward in ſmall, and ſmaller rings, like a ſcrue drawing in the guts or ſtomach, therein ſtopping the paſſages thereof, whereby the body can neither receive nouriſhment, nor ſend out excrement, with which the body is brought to an utter deſtruction; but theſe kinds of windes cauſing this diſtember, this *diſtemper* is oft times produced from ſharp, hot, cholerick humors; which ſharpneſs hath a natural contracting quality which is *rather of* the nature of a cramp, or a convulſion, then the nature of a collick; howſoever expulſive medicines are good in theſe caſes of diſeaſes. Convulſions are collicks in the nerves, and cramps collicks in the veins; and as the collick in the ſtomach or guts proceeds ſometimes from winde, and ſometimes from crude bilious ſharp humors, ſo doth this.

Chap. 198. *Of the diſeaſes in the head, and vapors to the head.*

DIſeaſes and ſwimming, which are diſeaſes, belonging onely to the head, differ as the motions and mixture, and forms of matter differ; for no diſeaſe, although of one and the ſame ſort, is juſt alike. But although theſe *diſeaſes* belongs onely to the head, yet the motions and humors [illegible] *the* ſtomach have greater affinity to the head, and many times cauſe the diſeaſes therein, by the courſe and recourſe thereto and therefrom; for ſome humors falling from the head into the ſtomach, do ſo diſaffect that part, as it returns more malignity up again, and ſometimes the ſtomach begins the war, ſending up ſuch an army of ill vapors, as many times they do not onely diſorder the head, but totally ruinate it; but moſt commonly the vapors which aſcend to the head, are gathered by contracting motions, into clouds, as vapor is which ariſeth from the earth, and as long as the vapor is in a cloudy body, it makes that part feel heavy, and the ſenſes dull by obſtructions, for it ſtops the noſe, dims the ſight, fills the ears, blunts the taſte, and numbs the touch; eſpecially if the obſtruction be cauſed from a cold contraction, which congeals the vapor to an icy ſubſtance, but when it is expulſed, by a hot dilation, it falls down like hail or flakes of ſnow, by which, I mean, cold glaſſie

flegme,

flegme, which cold flegme doth moſt commonly as ſnow doth which covers the face of the earth; ſo this flegme covers, as it were ſtops the mouth of the ſtomack, and deads the appetite thereof; but the danger is in theſe cold contractions, that if they ſhould laſt too long, they may cauſe numb palſies; or the like, and if contracted, ſo as one may ſay chriſtalined it may cauſe an incurable dead palſie, but if it be diſperſt by a hot expulſion, it is diſſolved in thundring coughs, or falls like pouring ſhoures of * rain, running through the ſpouts of the noiſe, eyes, and mouth, and through the pores of the skin, and ſometimes falls into the cabberns or bowels of the body, as the ſtomack, and the intrals; but if ſome of the floud-gats chance to be ſtopped by obſtructions, theſe ſhoures may chance to overflow the body, and make an utter deſtruction, otherwiſe it onely waſhes and cleanſes theſe parts; but if vapor be gathered by a hot contraction, they become ſharp and ſalt, as being of a burning quality, and if they be diſperſt by a hot expulſion, they fall down like a miſling rain, which hath a ſoaking and penetrating faculty, cutting and piercing thoſe parts they fall on by inſenſible degrees, which rots the vital parts, not onely by the ſharpneſſe which ulcerates, but by a continuated unnatural weakneſſe, which if once the parts begin to decay, which is the foundation, the building muſt needs fall.

* Rheum
* Sweats

Chap. 199. *Of catching cold.*

ONe is apter to catch cold ſtanding againſt a crevis, or door, or window, then in a wide plain.

For narrow paſſages receive air, as pipes do water, though there comes in leſſe quantity, it paſſes with a greater force.

The like cauſe makes us catch cold after great heats, by reaſon the pores of the body are extended there-with, and are like ſo many windows let open, which receive air with too great a force.

Chap. 200. *Of the ſeveral motions in an animal body.*

WHen a body is in perfect health, the motions therin do not onely work regularly, and proportionably placing every part of matter rightly, and properly mixing, and tempering the matter as it ſhould be, or as I may ſay, fittly; that is, when the quantity of matter, or humour is proportionably, and the motion moves equally, for though every kinde or ſort of motion may move evenly, and keep juſt time, yet not equally or harmoniouſly; as for example, ſay there were a company of muſicians, and every one played skilfuly, juſtly, tunable, timely, on the ſame notes; yet may there be too many

trebles for the tenor, and baſes, or too many tenors for the trebles and baſes, and too many baſes for the tenors and trebles to make a harmony; So in the body there may be too much of one, or more kinde of motions for other kindes to make a harmony of health, as for proof; too many contracting motions, make the body too dry, and contract diſeaſes; as for example, inſtead of binding any thing, we ſhould break it by pulling or drawing too hard together, or inſtead of joyning of parts, we ſhould knock them ſo cloſe as to rivet, or ſplit them; or inſtead of gathering ſuch a quantity of matter, or joyning ſuch a number of parts, we ſhould gather twice or thrice the quantity; or numbers of the like examples might be given; for all other kinde of motions, as dilating or expulſive, inſtead of throwing out the ſuperfluities, or rubbiſh in a houſe, we ſhould pull down the houſe, and diſperſe the materials therein, digging up the foundation thereof.

Likewiſe too many dilating, or expulſive motions, may diſperſe, or divide parts, or unſettle, or unground parts: which diſunites weaknes, and diſſolves parts or bodies.

Wherefore all contracting, attracting, retentive, diſgeſtive, dilating, expulſive motions in a well tempered body, muſt move like the ſeveral Planets, every ſort in their proper ſpheares, keeping their times, motions, tempers, and degrees; but too many or too ſtrong contracting motions, cauſe the gout, ſtone, plurifie, hective fevers, numb and dead palſies, dry-liver, brain, and many the like; and too many dilating motions, cauſe dropſies, winde-colicks, rhume, ſhaking palſies, ſweats, or fainting ſicknes, & milions, the like, and too many, or too ſtrong expulſive motions, cauſe fluxes, vomiting, bleeding, and the like, and too many, or too ſtrong digeſtive motions, cauſe too much blood, fat, and fleſh, which is apt to choak the viral parts, or may nouriſh ſome particular parts, ſo much as may make them grow, and ſwell out ſo bigg, as they may be diſproportionable, for the reſt of the parts in the body.

But ſtill I muſt remember my readers; that all dilating motions, are in the way of expulſion; and all attractions in the way of contraction, and digeſtion, are mixt motions taking part from either ſide, then I muſt remember my readers, that there are infinite wayes or manners of contractions, and infinite wayes, or manners of wayes of attraction, and ſo of retentions, dilations, expulſions, and diſgeſtions, where every change makes a ſeveral effect.

Chap.

Chap. 201. *Of the ſeveral tempers of the body.*

A Healthful temper of the body, is an equal temper of the body, and mixture of humors, well ſet parts, and juſtly tuned motions, whereby life dances the true meaſure of health, making ſeveral figures, and changes with the feet of times; and a ſick diſtempered body is, when the humours of body are ſuperabundant, or unequally tempered, and the motion perturbed; and irregular, keeping neither time nor meaſure, but all diſeaſes proceed from too much cold, or too much heat, or too much drought, or too much moiſture, or too much humor, or too much motion, or miſtempered humor, or unequal motion, or too ſwift motion, or too ſlow motion; all contracting motions make the body dry, al dilating motions make the bodie moiſt, ſome ſorts of contracting motions make the body hot and dry, other ſorts of contracting motions make the bodie cold and dry; ſome ſorts of dilating motions make the body hot and moiſt; other ſorts of dilating motions make the body cold and moiſt; all ſlow or quick motions cauſe the humours of the body to be heavy, thick, and clammy, all ſwift motions cauſe the humors of the body to be thin, ſharp, and ſalt, all croſſe-juſtling, or beating motions, cauſeth pain; and according to ſuch and ſuch irregularities, are ſuch, or ſuch ſorts, or, kinde, or ſorts, or degrees of diſeaſes, are produced there-from.

Chap. 202. *The nature of purging medicines.*

Moſt purging drugs are of the nature of hot burning fire; for the inherent motions therein work according to the humour, or matter it meets with, ſome humor they melt, making it thin and fluid, although it be hard, tough or clammy, and as fire doth oare which is unmelted metal, makes it ſo fluid, as it will run through a gutter of earth like water; ſo do ſome drugs make ſome ſorts of humour through the body, either upward or downward.

Again, ſome drugs will work upon ſome humours, as fire upon wood, dividing the humour into ſmall parts, as aſhes from wood, which naturally falls downward.

And ſome they will diſſolve by mouldring, and crumbling, as fire doth ſtone, which runs forth like ſand, which is ſtone indeed bred in the body.

Some drugs rarifie the humors into wind, as fire will rarifie, and evaporate water, which is ſet boyling theron.

Other drugs will at fire that diſtils out the moiſt, and watry ſubſtance, from that which is more groſſe; but it is to be obſerved, that all purging drugs that work by vomit, are ſomewhat of the nature of that kinde of fire we call ſulphur; or oyl that is melted, or fluid ſulphur,

I have treated of the ſeveral ſorts of fire.

when theſe ſorts of drugs are ſet on fire, as I may ſay, by the natural or diſtempered heat in the body, it flies out aſcendingly, like Ætna; for it is of the nature of ſulphur to aſcend as flame doth; and certainly al bodies have ſuch motions naturally inherent in them, as make and produce ſuch effects as fire doth on ſeveral ſorts of humours, by which motions the body hath a natural cleanſing faculty, which makes the natural purging quality: but when the motions are ſo violent, they oftentimes deſtroy the body with burning fevers, or violent fluxes, or the like; for the fire in the body, is like a fire in a chimnie, for when the chimny is clean, and the fire proportionable to lie therein, it warms and comforts all about, and is uſeful for many imployments for the neceſſaries of life; but if the chimny be foul, or the fire too big, or too much for the chimny, it ſets all in a flame, conſuming whatſoever it incompaſſes, if it be not quenched out with cooling julips, as with water, or by caſting on rubbiſh, or groſſe materials to ſmother it out, as in great fluxes, they will not only give reſtringent medicines, as having a natural reſtringent faculty, but thick meats, as thicked milk, or the like; but when the body is reſtringent, or hath taken reſtringent medicines, it is produced by drying motions, as contracting, or retentive motion, if they be hot, retentive, or contracting motions, they they harden and confirm the humours, as the heat of the ſun, or the heat of the fire doth clay, which turns it to brick or tile, or thoſe things we call earthen pots, and according as the humour is groſſe or fine, the more brittle or hard, or thick or heavie, or thinne or light; It is for ſome humor as Proſelnye, or Chyney, others as the groſſer earthen veſſels; Again, ſome ſorts of contracting, or retentive motions draw the humour, as when bacon, neats tongues, or the like, are dryed in a chimney, or oven, or the like; other ſorts of not contractions draw the humour, as the ſun doth the earth, drying up the watry ſpring therein; but if the reſtringencies either of the body, or of the medicines be cauſed by cold retentive or contracting motions, it dries the humors, as cold froſt dries the earth, or bindes up the humors, as froſt binds up the waters in icy fetters, or thickens the humors, as cold thickens the water, or vapor drawn from the earth into clouds of ſnow. But I am to advertiſe my readers, that all expulſive motions are not fiery expulſions; for there are infinite ſeveral wayes of expulſive motions, and dilations.

Secondly theſe fiery motions do not alwayes work expulſively, but contractively, attractively, and retentively, and diſgeſtively.

Thirdly, all expulſive, dilative, diſgeſtive, contractive, attractive, retentive motions are not fiery, but there is ſuch a kinde, or ſort of contractions, attractions, retentions diſgeſtions, dilations, and expulſions, as belong to fire or heat, or as I may better

better ſay, produces heat or fire, and as I ſaid there are infinite ſeveral wayes of each kinde of motion; as for example, I will treat of one of them: a bee gather wax, a bird gather ſtraws, and a man gathers ſticks; the bees gather and carie the wax to the hive to make a comb, to lay, or hold and keep the honey; the bird gathers and carries the ſtraw to build a neſt to hatch her young ones in; the man gathers wood to mend his houſe; theſe all gather to one end, but yet ſeveral wayes; for the bees gather the wax, and carie it on their thighs, the bird gathers the ſtraw, and carries it with their bill, the man gathers with his hands, but carries it ſeveral wayes, as on his head, or on his ſhoulders, or at his back, or in his armes, and milions of the like examples may be given upon each kinde or ſort of motion, or moved matter.

Again, I muſt advertiſe my readers, that though I ſay there are fiery motions in drugs, and natural fiery motions in every animal creature, and ſo in many other figures; yet I mean not a bright ſhining fire, although ſome are of opinion, that in the heart is a thin flame, and when that is put out, or goeth out, the creature dies; but I mean not ſuch a fire, for to my apprehenſion there are three ſorts of fire to our perceivance, although there may be numberleſſe ſorts, yet all of one kinde: as for example, there are thoſe creatures we call animals, though ſome are beaſts, birds, fiſh, and men, but not onely ſo, for ſome are of one ſort, and ſome of another; for a lennit is not a parot, nor a parot an owl; nor a horſe a cow, nor a ſheep a dog, nor a whale a herring, nor a herring a plaiſe, nor a plaiſe a lobſter; nor a black-more is not a tauny-more, nor a Europian an Ethiopian, yet all are of animal kinde; ſo although there may be ſeveral ſorts of fire, and ſo of the other elements, yet all are of the fiery kinde, or likewiſe the fiery motions make ſeveral figures, and ſeveral figures have ſeveral fiery motions, for every ſort of animals have a ſeveral ſhape, and ſeveral motions belonging to that ſhape; ſo in fiery figures, and fiery motions; but as I ſaid before; there are three ſorts of fire. The firſt is a bright-ſhining hot-burning fire, that is, when the interior, and exterior temperament of matter, and the interior and exterior figure, and the [illegible] exterior motions be all as one. The ſecond is a [illegible] fire, but not a bright ſhining fire, ſuch as Aqua-[illegible] and ſuch ſorts of the ſame nature which will burn as fire doth, but not thin as the other fire doth; for though they are both of an interior nature, yet not of an exterior, for the bright-ſhining fire is all compoſed of ſharp points, as I may ſay, lines of points, but this vitral fire is as ſharp edged lines, like a raſor, or knife, or the like, neither is there external motions alike; for bright-ſhining fire mounts upwards, when it is not ſuppreſt, or in a ſtraight paralel line, for flame which is the liquid part of bright-ſhining fire, although it moves in ſeveral lines, as it aſcends, yet the lines

That is when it works, and converts a thinner ſubſtance to its own nature.

lines they aſcend in are a ſtraight diameter line, but this vitral fire deſcends as it were downward, or divides as ſtreames of water do, that digs it ſelf a paſſage through the earth, ſo this vitral cuts a paſſage, through what it works on, neither can this ſort of fire work ſo variouſly, as bright-ſhining fire can, by reaſon it hath not ſo many parts, for points will fall into more parts, and are more ſwift in motion, then the edged line; as for example, duſt which is numerous little parts heapt together, will be more agile upon the leaſt motion, although it be of a weighty nature, as of the nature of a ſtone.

The ſmal haires which be of a light, and weightleſſe nature, but being not divided into ſo many parts, cannot move ſo nimble, as being united lines, but if you cut the hair into ſmal parts, it ſhall move with more reſtleſſe motion, then the ſand, by ſo much the more as the ſubſtance is lighter.

The third ſort of fire is that which I call a cold dull fire, ſuch as brimſtone, or ſulphur, mercury, ſalt, oyl, or the like, this ſort in the interior nature is of the nature of bright-ſhining fire, both in the motions, and temperaments of matter, but not in the exterior, for it is compoſed of points, but thoſe points are turned inward, as toward the Center; but aſſoon as it touches the bright-ſhining fire, it ſtraight turns the points outward: for thoſe points ſoon catch hold of thoſe ſtraight circumferent lines, and break them in ſunder, which as ſoon as they are broke, the points are at liberty, and taking their freedom, they mount in a flame; but when thoſe lines are not diſſolved by fire, but crack, as we will ſnap a ſtring aſunder, then they onely ſparkle fire out, but not flame out; but mercury, or quick-ſilver, the interior is fire, but the exterior is water, for the exterior moves extenuating circles as water doth, and ſo much as to make it ſoft, and fluid, but not ſo much as to make it wet; for though it alwayes gathers into ſphiratical figures, which ſhews that the exterior would run into wet, but that the interior hinder it, by drawing the circles inward, as cold doth water into hail-ſtones; but yet the interior wants the force to make it ſo hard and firm; but as I did advertiſe my Readers before, all ſorts of fire work according to the matter it meets with, there is none work ſo variouſly, as the bright-ſhining fire, which makes me think that drugs are more of the nature of bright-ſhining fire, then of the two other ſorts, becauſe they work in the body according to the humour it meets with; for if it meets wit watriſh humors, it boyls it as water in a pot, which either boiles over the mouth of the ſtomack, or evaporates out in ſweat, like dewes, or draws downward, like as in ſhowers of rain, it melts humors like metal, or turns humors like wood into aſhes, or calcines the humor, where ſome part is fixed, other parts are volable; As for example, Rubarb hath a double facilty, ſome humors it expels out, others it bindes up; for Rubarb is both pur-

But bound about with ſtraight ſmooth lines without as to the circumference.

As a flint, hard ſuger, brimſtone, or the like.

purging, and reſtringent, as it is to be obſerved in great fluxes; for what it doth not caſt forth it confirms to a more ſolid ſubſtance, ſo as it doth expulſe and contract at one time, as I may ſay, according as it findes the humour it works with; Again, ſome drugs move ſeveral expulſive wayes, as by vomit and ſtool, where the vomiting is produced with aſcending expulſions, ſiege with deſcending expulſions, but that expulſes deſcending are of the nature of vitral fire, all that expulſes aſcendingly, is of the nature of ſulphurous fire; but the generality of drugs works like bright ſhining fire, according to the nature of the matter, it meets with, as I have formerly deſcribed.

Chap. 103. *The motion of Medicines.*

AS I have ſaid in my former chapter, that all medicinal drugs, or ſimples, eſpecially thoſe that purge, are of the nature of fire; for the motions therein moſt commonly work apart according to the humor it meets with, as fire doth, which in general is to move ſo and ſo *; yet the natural motions in drugs, and likewiſe in fire are expulſive, and all that is expulſive, is by antipathetical nature ſtriving to deſtroy by uniting parts, and all contractive motions are by a ſympathetical nature, ſtriving to unite, by imbracing, or drawing parts together, yet the nature of the body they work in the contracting motions, may be antipathetical, and expulſive motions may be ſympathetical, the one in expelling the ſuperfluous and corrupted humors, the other in contracting them into a diſeaſe, but moſt diſeaſes are cured by contrary motions; for if they be diſeaſes of expulſions, they muſt be cured by contracting, or retentive medicines; if they be diſeaſes of contractions, they muſt be cured by expulſive medicines, or elſe dilating or attracting; for though the motions of attraction be agreeable, or of the nature of contraction, as to its ſelf, as I may ſay, that is, to draw or carry all to a center, as it were, but the onely difference is, that attraction make it ſelf the center, drawing all things to it; but contractions make the matter they work on, part of the center with them, but all attractions are inſinuating motions, inviting, or drawing all towards it ſelf, or like a man that ſhould draw a diſh of meat, or as if one ſhould ſuck the breſts or udder, but contracting motions are rather to binde, or knit up parts together, but if the diſeaſes proceed from diſuniting motions, then retentive medicines muſt be applied, which is to firm, hold, or ſettle parts that are looſe, unſteddy; but if the diſeaſes proceed out of diſorder and irregularity, they muſt be cured by digeſtive medicines, which is to put every part in order, and in its proper place; like wiſe States-men that are neither partial or malicious, (but Readers know) that though

* That which is moſt apt to

though I ſay all diſeaſes muſt be cured by contrary motions, yet the motions that are in ſuch medicines, muſt ſympathize, and agree with the conſtitution of the body. Laſtly, it is to be obſerved, that every degree in the diſeaſe muſt be followed with the ſame degree in the medicine, whether ſwift or ſlow, ſtrong or weak, or more, or leſſe, that is, you match your medicines to the diſeaſe; but miſtake me not, I mean not after the literal ſenſe, but after the metaphorical ſenſe; but al purging medicines are diſlative or expulſive, all reſtringent medicines, are contractive, and retentive.

I mean purning motions. Reſtraining motions. Attractive motion. Reſtoring motion.

All drawing medicines are attractive.

All reſtorative, or reviving medicines are diſgeſtive.

And theſe contracting medicines that muſt cure the body, muſt ſympathize with the natural health, and conſtitution of the body, not with the diſeaſe, for theſe motions, draw, gather, or at leaſt knit, and bind up the ſound parts from the corrupted parts, leſt they ſhould intermix, and retentive remedies do not onely ſtay thoſe parts that are apt to diſunite, but give ſtrength, and hold out the aſſaulting motions in miſtempered matter, and all attractive medicines that ſympathize with the natural conſtitutions of the body, ſucks and draws forth from the corrupt matter the pure, which is mixed, or involved therein; but thoſe attractive, and drawing medicines that are applied to outward ſores, or the like, muſt have a ſympathy with the malady, or putrifaction, for all averſions do caſt outward; or from them, not draw to them.

As for the expulſive remedies they muſt be carefully applied, leſt they ſhould caſt forth the wrong humor, by which the * malignant grows more powerful, or elſe ſhould carry out more humor, then the ſtrength of the body, will permit, or ſhould be ſo weak, or of ſuch a nature, onely to diſturb, and unſettle, but not carry forth, from which diſturbance great inconveniences, or deadly quarels in the body may ariſe; wherefore theſe medicines are more dangerous then any other ſort, although no medicine can be ſafely applied, unleſſe the ſtrength and nature be anſwerable to the conſtitution of the body, or the diſeaſes in the body, no not thoſe we call reſtorative, or reviving remedies, which work digeſtively, ſuch as cordials, or the like, for when there is more applied then will agree with the conſtitution of the body, or with the temper, or degree of the diſeaſes, they turn from being aſſiſting friends, to aſſaulting enemies, for when they have more force then regular work, they put in diſorder thoſe regularities, for want of regular imployment; for it is againſt the nature of innate matter to deſiſt from moving, or working, but it is not againſt nature to change and alter the motions.

* The humor that ſtaies behinde.

The ſeveral degrees, and natures of drugs of every particular

GReat God, from thee all infinites do flow;
And by thy power from thence effects do grow;
Thou ordereſt all degrees of matter, juſt
As t'is thy will and pleaſure move it muſt,
And by thy knowledge orderd'ſt all the beſt,
For in thy knowledge doth thy wiſdom reſt;
And wiſdom cannot order things amiſs,
For where diſorder is, no wiſdom is.
Beſides, great God, thy will is juſt, for why?
Thy will ſtill on thy wiſdom doth rely.
O pardon Lord, for what, I now hear ſpeak
Upon a gueſſe, my knowledge is but weak;
But thou haſt made ſuch creatures as mankinde,
And gav'ſt them ſomething which we cal a mind,
Alwayes in motion, never quiet lies,
Untill the figure, of his body dies;
His ſeveral thoughts, which ſeveral motions are,
Do raiſe up love, hope, joyes, doubts and feare;
As love doth raiſe up hope, ſo fear doth doubt,
which makes him ſeek to find the great God out:
Self love doth make him ſeek to finde, if he
Came from, or ſhall laſt to eternity;
But motion being ſlow, makes knowledge weak,
And then his thoughts 'gainſt ignorance doth beat,
As fluid waters 'gainſt hard rocks do flow,
Break their ſoft ſtreams, & ſo they backward go:
Juſt ſo do thoughts, & then they backward ſlide,
Unto the place where firſt they did abide;
And there in gentle murmurs, do complain,
That all their pains and labour is in vain;
But finde none anſwers, the great Creator muſt,
Man ſeek no more, but in his greatneſs truſt.

FINIS.

I Finde ſince I have read my book over, I could have enlarged that part of my book that treats of diſeaſes, much to the advantage; but I muſt intreat my noble Readers, to remember there are natural humors, and metamorphoſed humors, which are wrought by ſeveral motions, as thoſe of Elements; Alſo that there are natural contractions, attractions, retentions, digeſtions, delations, expulſions; Likewiſe that there are unnatural of all theſe motions: that is, ſuch as are proper or improper to the the natural health, or conſiſtence of the ſeveral parts and the generality of the whole figure. Alſo that the motions that make the humors, and the motions that move the humor may be quite different, and ſome parts of a humor may be made by ſome ſorts of motions, and ſome by other ſorts of motions, where my diſcourſe of the motions which makes the Elements will enlighten the Readers.

ERRATA.

IN my Epiſtle to my Honourable Readers, for *pair* read *poiz*. In a Condemning Treatiſe of Atoms, for *figures* read *fobures*. p. 10. l. 28. r. *diſſolution*. p. 12. l. 30. r. *other*. p. 22. l. 35. r. *diſſolution*. p. 23. l. 15. r. *finite*. p. 24. l. 21. r. *brain*. p. 30. l. 2. r. *individable*. p. 34. l. 21. r. *ſpread*. p. 35. l. 22. r. *digging*. p. 38. l. 21. r. *prints*. p. 43. l. 16. r. *cold*. p. 58. l. 47. r. *extenuated*. p. 60. l. 15. r. *crinkling*. and l. 36. r. *triangulars*. p. 62. l. 4. r. *from water*. and l. 17. r. *as*. p. 62. l. 32. r. *manner*. p. 65. l. 14. r. *piercing*. p. 104. l. 5. r. *heptick fevors*. and l. 12. add *my*. p. 116. l. 25. r. *print*. p. 123. l. 6. r. *foul*. p. 130. l. 6. r. *diſſolution*. and l. 27. add *and ſwooning*. p. 143. l. 3. r. *ſenſitive*. p. 144. l. 24. r. *gold*. p. 148. l. 10. r. *veines*. p. 149. l. 6. r. *fursball*. p. 157. l. 18. blot out, *or quick*. and l. 42. r. *as*. p. [illegible]. r. *dry*. and [illegible]. r. *dry*. p. 160. l. 11. r. *then*. p. 161. l. 19. r. *are not all expulſive*. p. 16[illegible]. 23. r. *matter from the*.

FINIS.

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